

OBSERVATIONS

ON THE

General and Medical Management

OF

INDIAN JAILS;

AND ON

THE TREATMENT OF SOME OF THE PRINCIPAL DISEASES
WHICH INFEST THEM.

BY

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SURGEON ON THE BENGAL ESTABLISHMENT,
AND SECRETARY TO THE MEDICAL BOARD OF THAT PRESIDENCY.

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1845.

TO THE
HONORABLE
THE COURT OF DIRECTORS

OF THE
EAST-INDIA COMPANY,

THE FOLLOWING
OBSERVATIONS,

ON THE
General and Medical Management of the Jails

THROUGHOUT THE GREATER PORTION OF THE
VAST TERRITORIES

SUBJECT TO THEIR GOVERNMENT,

ARE INSCRIBED,

WITH EVERY SENTIMENT OF RESPECT,

BY

THEIR MOST OBEDIENT AND HUMBLE SERVANT,

THE AUTHOR.

P R E F A C E.

It will readily be observed, in perusing the following observations, that they were originally intended to form an introduction to a larger work, which should comprise, at full length, the whole of the replies received from medical officers to the circular letter of the Medical Board, on the subject of the great sickness prevailing in jails.

Several circumstances, however, concurred to prevent this intention from being carried into execution. The expense would have been great: the variety of the information, which the volume would have contained, would scarcely have possessed sufficient interest to attract the general reader: the Government could hardly have been expected to act on the suggestions, it might have contained; unless they had come before it, in a more formal manner, supported by the civil authorities: and finally, supposing the Government entertained a desire to do so, it had at all times the power to call for the original documents.

For these various reasons, it was deemed inexpedient to incur the expense of publishing the whole of the communications, on which the present Report is founded; at the same time, the necessity was strongly felt of acknowledging, in some manner, the very valuable information, which had been so freely, and so

cheerfully contributed by the Medical Service generally, and more especially by the medical officers, at that time, attached to Civil Stations.

The names of those, whose contributions appeared the most valuable, or to throw new light on any particular point of the subject of inquiry, have accordingly been recorded in the body of the work; that there are others, the value of whose communications has not been sufficiently acknowledged, though fully appreciated, is true. This is to be regretted; it arose however from no wilful neglect, but from the impression, which I have before mentioned, I entertained, at the time of writing the Report, that I should be able to publish the whole of the documents, on which it is founded.

I have endeavoured to make some reparation for the omission by prefixing a list, containing the names of the whole of those, who addressed the Medical Board on the subject.

That my portion of the task has been very indifferently executed, I am well aware; and likewise, that it is but a poor excuse to offer in extenuation, that the Report has been printed from the original rough draft: I am not without hopes, however, that it may be productive of benefit, and I shall trust, that a future opportunity will enable me to present it to the public, in a form more worthy of their approbation.

Chowringhee,
June 26, 1835. }

A List of the Medical Officers, from whose communications the following Report has been principally compiled.

Names.	Rank.	Stations.
J. LANGSTAFF,	Offg. Supg. Surgeon,	Presidency.
F. P. STRONG,	Assistant Surgeon, ..	24-Pergunnahs.
G. LAMB,	Surgeon,	Dacca.
T. W. BURT,	Assistant Surgeon, ..	Furriddpore.
D. BROWN,	Ditto ditto,	Sylhet.
C. W. FULLER,	Ditto ditto,	Beerbhoom.
H. CHAPMAN,	Ditto ditto,	Chirra Poonji.
J. PAGAN,	Ditto ditto,	Rungpore.
G. G. MCPHERSON, ...	Surgeon,	Moorsshedabad.
W. A. GREEN,	Assistant Surgeon, ..	Mymensing.
J. LAMB,	Ditto ditto,	Maldah.
A. KEAN, ..	Ditto ditto,	Baulcah.
J. INNES,	Ditto ditto,	Bhangulpore.
R. RANKIN,	Ditto ditto,	Sarun.
J. McRAE,	Ditto ditto,	Monghyr.
J. STOKES,	Ditto ditto,	Hummeerpore.
C. MADDEN,	Ditto ditto,	Futtehpore.
H. GUTHRIE,	Surgeon,	Late of Allahabad.
J. HERVEY,	Assistant Surgeon, ..	Baudah.
A. BEATTIE,	Ditto ditto,	Allahabad.
W. P. ANDREW,	Ditto ditto,	Mynpooree.
D. RUSSEL,	Ditto ditto,	Panniput.
A. A. McANALLY, ...	Ditto ditto,	Hissar.
R. LAUGHTON,	Ditto ditto,	Amballah.
G. G. SPILSBURY, ...	Surgeon,	Jubbulpore.
CHRIST. GARBETT, ...	Assistant Surgeon, ..	Seonee.
R. H. IRVINE,	Ditto ditto,	Hussingabad.
H. M. GALT,	Ditto ditto,	Nursingpore.
J. DUNCAN,	Ditto ditto,	Beawur.
W. A. VENOUR,	Supg. Surgeon,	Neemuch.
T. TWEEDIE,	Ditto ditto,	Cawnpore.

P O S T S C R I P T.

SINCE the publication of the first edition of this work, much has been done to ameliorate the condition of the Indian Convict. The subject was once or oftener brought to the notice of the British Parliament, and it has attracted a becoming degree of attention from the Supreme Government of India.

By that authority, a Committee, consisting of fourteen public functionaries, the most conspicuous for rank and talent,* was appointed to enquire into the

* The Committee consisted of the following distinguished individuals :

PRESIDENT.

The Honorable HENRY SHAKESPEAR, *Member of the Council of India.*

MEMBERS.

The Honorable SIR EDWARD RYAN, *Chief Justice of H. M. S. Court of Calcutta.*

The Honorable THOMAS BABINGTON MACAULAY, *Member of the Council of India.*

The Honorable SIR JOHN PETER GRANT, *Justice of H. M. S. Court at Calcutta.*

The Honorable SIR BENJAMIN HEATH MALKIN, *Justice of H. M. S. Court at Calcutta, (died on the 21st of Oct. 1837.)*

state of Indian Jails, and on the 8th of January 1838, they delivered in their Report.

The result has been not to invalidate, but rather to confirm every statement made in the first edition of this work. In several instances they have adopted the sentiments and suggestions contained in it, and too seldom, I regret to say, have they acknowledged their obligation.

Among others of a similar nature, their recommendations in regard to the clothing and dieting of prisoners may be cited as examples of this. That in many other instances, in their trains of reasoning, and in the deductions, which they have drawn from their premises, I differ widely from them, will be sufficiently apparent in the course of this work; no one, however, can deny, that they have brought the greatest

CHARLES HAY CAMERON, ESQ., *Indian Law Commissioner*,
(Absent.)

JOHN MACPIERSON MACLEOD, ESQ., *Ditto*.

GEORGE WILLIAM ANDERSON, ESQ., *Ditto*.

FREDERICK MILLETT, ESQ., *Offg. Ditto*.

CHARLES BARWELL, ESQ., *Bengal Civil Service*, (died on the
12th of Dec. 1836.)

WILLIAM HAY MACNAGHTEN, ESQ., *Bengal Civil Service*.

DAVID MACFARLAN, ESQ., *Ditto*.

CHARLES EDWARD TREVELYAN, ESQ., *Ditto*.

JOHN PETER GRANT, ESQ., *Ditto*.

SECRETARY.

JOHN PETER GRANT, ESQ.

labour and research to the performance of their task, and that their Report contains a mine of information well worth applying to, by all interested in the subject.

Since public attention was first attracted to the subject, the entire system of dieting the convicts has been changed, and they are no longer worked in gangs on the public roads, away from the district Jails to which they belong, and exposed to all the inclemencies of the weather, and to many other causes destructive to health and to life.

To the Hon'ble W. W. Bird, Esq., late President of the Council of India and Deputy Governor of Bengal, acting under the Supreme Government of the Right Hon'ble the Earl of Ellenborough, much of this amelioration is owing, and it would be injustice to deny, that great credit is also due to the Medical Board of Bengal, who have never failed to avail themselves of suitable opportunities to urge reform in this department of the administration, on the attention of Government.

But though great and manifest improvements have been effected, the system of convict discipline in India is yet in its infancy, and much accordingly remains to be done.

To effect a little more, and to point out the path to others desirous of following in the same course, are the principal objects which I propose to myself in this

re-publication, and if I succeed in these objects, I shall be satisfied.

Much is to be hoped from improved measures for the prevention of crime; and I have accordingly thought that a few observations on that subject might not be altogether out of place; I have, in consequence, in the present edition, incorporated two chapters, on the Prevention of Crime, and on the Theory of Punishment, or object with which punishment ought to be inflicted. With the view of rendering it more complete, in a professional point of view, I have appended to it, the Essay on the Fevers and Alvine Fluxes of the natives referred to; a communication on the Land Scurvy of the Natives; and likewise, the chapter of my work on Cholera, which relates to the treatment of that disease.

For several foot notes to these, I am indebted to my esteemed and talented friend Professor Goodeve, to such notes his name will be found affixed in every instance, and I have no doubt, they will be equally valued by my professional brethren, as they are by me.

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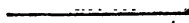
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ON THE

General and Medical Management

OF

INDIAN JAILS.



ON . . .
THE MEDICAL MANAGEMENT
OF .
INDIAN JAILS.

CHAPTER I .

Introductory Observations—Comparative Rate of Mortality among Prisoners—Circular Letter of the Medical Board—Character of the Replies received—Heads under which the subject will be considered.

I AM sensible, that in preparing the following summary, I am doing nothing more than the duty, which I owe from my official situation to Government, and to the community at large; that duty I trust I shall be found ever ready to perform, with alacrity and cheerfulness, to the best of my ability. On the present occasion I enter on it with more than common pleasure, from the hope, that I may assist in awakening attention to the subject, and thus prove the means of alleviating the sufferings of an extensive and unfortunate class of persons. There are few perhaps aware how extensive that class is, and that at any given period, there are not fewer than from forty to fifty thousand persons under confine-

ment,* in the various jails throughout the Presidencies of Fort William and Agra. Were I to enumerate the whole of those, who suffer confinement in the course of a year, the number would be of course greatly enhanced.

There are some, I am aware, who consider that the class of persons, to whom I allude, are unworthy of consideration, and that as convicted criminals, they are, already too humanely treated. The number who reason in this manner is probably but few. The enlightened spirit of the times, in which we have the happiness to live, while it has enlarged the views and powers of the human understanding, has likewise purified and refined the feelings of the heart. An abhorrence of vice, real or assumed, ostentatiously obtruded on public observation, has accordingly ceased to be received as an indication of the possession, much less as an adequate substitute for the practice of Christian charity and virtue.

I shall take it then for granted, that with the generality of mankind, no apology will be considered necessary, for endeavouring to do good to my fellow creatures, under whatever circumstances placed ; and with those who think differently, it may form some palliation of my offence, that a great number .

* In 1834 the number of prisoners in the Jails of the Straits of Malacca, Bengal, and the North Western Provinces, as deduced from the Medical Returns was, 40,914—in 1835, 37,527—in 1836, 40,968—in 1837, 47,475—in 1838, 56,637—in 1839, 50,752—in 1840, 48,144—in 1841, 47,722—in 1842, 47,736.

of those under confinement in the various jails of this country are incarcerated, not for offences of a deep moral dye; but for such, as in other countries we are apt to consider as emanating from the high and warlike spirit of the people; in short, for asserting or defending those rights, which the miserably tardy course of civil justice has proved insufficient to protect.

I pretend not to be a Howard; but were these men as criminal as they are represented to be, I should nevertheless feel called upon, by every sentiment of humanity, to ameliorate their condition to the utmost of my power, consistent with the due enforcement of the punishment awarded them; for I hesitate not to assert it, as my opinion, that we can have no right to inflict a single pang, beyond that, to which these unfortunate individuals have been sentenced by a competent tribunal.* There are few who will read the distressing occurrences recorded in the following

* In how far enquiry was called for the reader will be able to find from the following para. of the Prison Discipline Committee's Report, written two or three years subsequent to this: "The present system appears to us to be essentially such as the Government is imperatively required, by every consideration of justice and policy, thoroughly to reform. We shall accordingly suggest the outlines of an entirely new plan of Prison-discipline, from which, in our judgment, there seems reasonable ground for expecting, not only the remedy of all the evils of the present system which can be remedied by partial improvement, but also the remedy of many excessive evils which we think are inseparable from the present system, however modified; and this, we believe without the introduction of any counterbalancing evils of its own."—Vide para. 5.

extract from the report of a medical officer, now deceased, nor feel inclined with me, to interfere to the best of his ability, to prevent the recurrence of scenes, painful even to read of, and which may be supposed to have diffused, at the time, anguish and misery among hundreds of surviving relatives.

During "the first six months of 1829, fifty-nine deaths occurred, and during the succeeding six, one hundred and seven;" and this too, be it observed, in a jail containing six hundred prisoners, or less: but to return to the report: "With reference to the extraordinary mortality and waste of human life exhibited in the returns of this hospital, I do not consider, that I am going beyond the limits of my duty, in pressing on the attention of Government the propriety of some measure modifying the present penal regulations, so as to substitute some other punishment for that of long continued imprisonment, which in this jail, in so large a proportion of cases, has proved equivalent to a sentence of death." The dreadful mortality recorded in this extract is perhaps unparalleled, and yet other instances of a nearly equally appalling nature might be cited,* were there occasion

* "Our Returns shew an instance in which, out of a certain number of criminals selected at hazard, and sentenced by law to suffer temporary punishments of various degrees of severity, over and above those who, in all human probability, would have died under ordinary circumstances, one-fourth of the whole number perished in the course of ten months, in consequence of their having been sent to a road-gang in an unhealthy spot."—Prison Discip. Committee's Report, para. 135.

for it; my object, however, is neither to harrow up the feelings, nor to indulge in useless lamentations for the dead; but to endeavour to benefit the living.

In comparing the rates of mortality, which prevail in our native army, and among the convicts in our jails, I do not mean to deny, that on some occasions, as for example in Arracan and Cachar, disease has committed frightful ravages among troops; in such instances, however, the sufferers have been located in a climate, which was foreign to them, and have necessarily been subjected to great exposure, and to privations of all sorts, in the performance of the service, on which they have been employed.

Nothing of this sort can either be fairly urged or admitted in extenuation of the mortality in jails, the prisoners in general residing in the climate, breathing the atmosphere, and using the kind of diet, to which they have been accustomed. But solitary or even occasional instances of sickness and mortality scarcely form a fair criterion, by which to judge, and on the present occasion they need not be referred to; for we know, that while the highest rate of mortality in the native army has been only a little above two per cent., and that only in a solitary instance; a mortality of 25 per cent. is not unusual among convicts; and that while the average mortality throughout the whole of the native troops, during the past year, has been scarcely one per cent., that amongst the convicts under confinement in our jails, has been little less than seven per cent. A little reflection will satisfy us, that a certain degree of difference might

be expected from the advantages, which the sepoy's of our army comparatively enjoy. They are men generally in the prime of life, and of the most robust and athletic forms; they are provided for on the Invalid Establishment, when they become incapacitated from age, or from confirmed disease, for farther effective service; and finally, it is not impossible, that a portion of the mortality, which actually takes place amongst this class of persons, is not made to appear, from their being permitted occasionally to visit their homes for change of air, when their health is in an unpromising state. To counterbalance this, it may be mentioned, that hopeless cases of disease among convicts are sometimes got rid of, by the casual expiration of their periods of confinement. From these premises, it would appear, that age is the principal point, in which we ought to consider our native troops to have the advantage over convicts, in so far as health is concerned; the difference, however, in the mortality prevailing in the two classes, is too striking to be attributed solely to this cause: were it otherwise, we should at least expect, that the comparative rate of mortality, whatever it might be, should be uniform.

This is however far from being the case, for while the mortality among the prisoners in the Benares circle, and to the west of it, has been less than four per cent. during the past year, among those in Bengal Proper, it has been upwards of ten per cent. It is clear then, that we must look to some other cause for the great difference, which exists in the rates of mortality, prevailing among our native troops.

and the inmates of our jails, in addition to those we have already mentioned.

In maintaining the comparison, I have hitherto purposely refrained from taking into consideration the advantages, which the former possess, of being better fed, better clothed, and less exposed to the inclemencies of the weather; for it appears to me, that in carrying a sentence of incarceration into effect, we can have no right to accompany it with such severity of treatment, as to peril the life of the unfortunate individual. It is not impossible, however, that some causes of the nature hinted at are in operation; for in the Upper Provinces, where the inhabitants are a hardier race, the diet more invigorating, and the climate more salubrious, the mortality, we have seen, is not strikingly great; while in Bengal, where the reverse of all these is the case, where the population are feeble and degenerate, the diet poor and innutritious, where the slightest exposure is followed by fevers, the sequelæ of which are not got rid of for years, it is little less than frightful. The inhabitants of the country notwithstanding enjoy a very tolerable share of health, and the climate, with all its imperfections, being that to which the prisoners have been accustomed, they ought with adequate precautions to be able to withstand it; that they are not, would seem to indicate that some defect in our system of jail management exists.*

* The following is the manner in which this comparison is spoken of in the Report of the Prison Discipline Committee, viz. "The

In corroboration of such a supposition; it may be stated, that the rate of mortality varies considerably in jails, not otherwise very dissimilarly situated; and that it has not unfrequently been remarked by those, who appeared to be close observers, that the mortality, which prevails among debtors, females, and convicts not sentenced to hard labour, is much less, than that among those, of whose sentence hard labour on the roads constitutes a portion. A consideration of these various circumstances, seeming to hold out a hope, that by the adoption of judicious measures, the sufferings of an extensive and unfortunate class of human beings might be alleviated, the Medical Board, with that humanity, which I trust will ever mark their proceedings, issued the

comparison which Dr. Hutchinson in his publication on Indian Gaols has made between the mortality of Sepoys, and that of prisoners, can afford no useful information, because prisoners belong to the most short lived of all classes, being either ill fed, or dissipated men; they are of all ages; many are in bad health when first confined; and every one of them is detained until his term expires, whether he get ill, or not. Sepoys, on the other hand, are taken from the most long lived class of the people, being mostly, in this Presidency at least, of the upper or middle ranks; they are selected partly on account of their apparent good constitution; they are never in bad health when they are enlisted; they become Sepoys at the healthiest period of human life; and they are invalided when they get old, and sickly." The cases are not stated by me to be perfectly parallel, but only analogous. But admitting what the Committee says to be true, we should at least expect one *nearly* uniform rate of mortality to prevail among the prisoners in the different jails throughout the country; but is this the case? quite the contrary!—it varies from one per cent. to 50 per cent. and upwards.

following circular to the whole of the Medical Officers serving under this Presidency; but more particularly to those attached to Civil Stations, and in charge of Jail Hospitals.

(No: 598.)

(CIRCULAR.)

To the Superintending Surgeons of Divisions.

December 8th, 1833.

SIR,

“ The Medical Board have observed with extreme regret the great mortality which prevails among the convicts under confinement, in the various jails throughout the country, but more particularly in those situated in the province of Bengal.

“ It would not, perhaps, be unreasonable to expect, from persons of the above class, being nearly of all ages, and otherwise less favourably circumstanced, that a greater mortality should prevail among them, than among the native troops; still the difference is so great, and so striking, that the Board are inclined to believe, by the adoption of judicious measures of a general nature, that it might be diminished.

“ Actuated by this impression, I have been directed to request, that you will call on all the Medical Staff within your Division, but more particularly on those attached to Civil Stations, to explain the causes, to which in their opinion the great rate of mortality, (in some instances averaging upwards of $2\frac{1}{2}$ per cent. throughout a Division, during one quarter, is to be ascribed.

“In conducting the investigation, the Board trust, that it will not be omitted to consider the influence, which the mode of working, dieting, clothing, and housing this unfortunate class of persons may reasonably be supposed to exert on their state of health.

“Under the last head, the Board request, that Medical Officers will state the average area of cubic feet, which is allowed to each prisoner in jail, and to each patient in hospital; whether ventilation is adequately attended to; and if, in their opinion, there is any thing objectionable in the site of the jail, or around it.

“Their attention is likewise requested to the mode in which their respective jails are constructed, and they are requested to state, whether they consider floors made of stone flags or puccah work objectionable, with reference to the domestic habits of the natives. The mode of roofing is likewise not to be forgotten, and Medical Officers will have the goodness to observe, if they consider the flat, vaulted, and Assyrian roofs unobjectionable in hospitals, or whether, in their opinion, a roof composed of a thin layer of clay or thatch laid upon mats, and afterwards covered with tiles, would not be preferable, and more likely to be congenial to the native habits and constitution.

“The Board are inclined to think, that a certain influence may be ascribed to change of climate, (convicts being occasionally brought from hilly tracts, and confined in jails situated in the plains;) to a change of domestic habits from mere confinement, to

a deprivation of spirituous liquors or intoxicating drugs, to which many of these persons have been accustomed; a certain influence is likewise probably to be attributed to the action of the depressing passions, and this perhaps could be proved, by an accurate examination of jail records. On all these points, however, the sentiments of Medical Staff are requested.

“ Along with their replies, Medical Officers will have the goodness to forward a statement of the mortality, which has taken place in the jails, at the stations, to which they are severally attached, for the last five years, distinguishing each year, and giving the average number of prisoners for that period; and, at the same time, to state to which of the foregoing, or any other causes, they are inclined to attribute the mortality, or a portion of it.

“ The Board expect, that Medical Officers at the same time will point out any means, which appear to them calculated to reduce the rate of mortality, and they rely on Superintending Surgeons of Divisions favoring them with the result of their experience, on a subject so interesting to every feeling of humanity, and so imperatively calling for investigation.

. I have, &c.,

(Signed) JAMES HUTCHINSON,
Secy. Med. Board.

This appeal was answered, as might have been expected, in such a cause, by nearly the whole of the Medical Officers attached to Civil Stations, and in a

manner, which reflected the highest credit on them. Where the reports of all are so excellent, it may seem invidious, if not presumptuous, in me to draw attention to those of particular individuals, and yet, I can scarcely refrain from noticing the great merit of those of Dr. Lamb of Dacca, Mr. Macpherson of Moorshedabad, and more especially of his Assistant, Mr. Kean, then officiating in Medical charge of the Civil Station of Bauleah. Having been permitted to examine the whole of these documents by the Medical Board, it is my intention on the present occasion to make use, in the freest manner, of the funds of information thus kindly placed at my disposal; to draw as largely as I can, on my own experience in the management of Jail Hospitals; to avail myself of the valuable suggestions, which have been made to me, from time to time, on the subject, by the Members of the Board; and from the whole of these sources, to compile a report on the management of Jails and Jail Hospitals generally, leaving the reports of individual Medical Officers to point out the deficiencies and imperfections of the particular establishments, of which they were in charge at the time.

In carrying these intentions into effect, I shall offer a few preliminary observations, on the evils attendant on incarceration generally; then consider the subject more in detail, under the different heads of housing, working, dieting, and clothing native prisoners; and finally touch on the general management of Jail Hospitals, and of the treatment of some of the most important diseases, which infest them.

CHAPTER. II.

Of the Statistics of Indian Jails, and of the evils, necessary and contingent, attendant on incarceration.

THE statistical information contained in the report of Mr. Assistant Surgeon Kean is so particularly valuable, that I shall readily be excused for enriching my pages with it, particularly as it may be considered an epitome of the statistics of Indian Jails generally, in the absence of materials, from which that information could be with accuracy compiled.

“There are at present,” Mr. Kean remarks, “five hundred and forty-eight persons under confinement in the jail at Bauleah.”

	Hindoos.		Mussulman.		Total.	Remarks.
	Males.	Femls.	Males.	Femls.		
Convicts, condemned to labor,	71	4	224	6	305	} 383
Convicts exempted from labor,	41	1	33	3	78	
Debtors,	15	1	27	0	43	
Persons not tried or not yet examined by the Commissioner,...	36	1	80	5	122	
	168		364			
	7	7	14	14	548	
	170		378			

“If we consider those, whose cases have not been decided, as convicts, the proportion of convicts to

debtors will be nearly as 12 to 1, and that of Mussulman convicts to Hindoo convicts, more than 2 to 1. If not so considered, the proportion will be—

Convicts to Debtors, nearly as	9	to 1
Mussulman Convicts to Hindoo Convicts, as...	2	to 1
Mussulman Debtors to Hindoo Debtors, as ...	$1\frac{3}{4}$	to 1
Mussulmans to Hindoos, more than	2	to 1
Males to Females as	25	to 1

“The following exhibits the number of our sick at present:

Convicts.			Debtors.		
	Males.	Females.		Males.	Females.
Hindoos,	12	0	Hindoos,	1	0
Mussulmans, ...	16	0	Mussulmans, ...	0	0
	28	0		1	0

“Thus at a time, when the jail is considered healthy, out of 548 prisoners, 29 are sick, or about 1 of every 19.

Out of 12 Females, there are 0 sick.

„ 43 Debtors,	1	„ or 1 in 43
„ 505 Convicts, and untried,	28	„ 1 18
„ 378 Mussulmans,	16	„ 1 $23\frac{1}{2}$
„ 170 Hindoos,	13	„ 1 13
„ 78 Non-labouring convicts,	2	„ 1 39
„ 305 Labouring convicts,	26	1 $11\frac{3}{4}$

“This is not the proportion of the mortality, but of the men in hospital, and of course those, who are obliged to labor, are fonder than others, of coming into hospital for trifling causes, such as chafing

from the irons, &c. to which they are more liable, and if not shamming, are not discouraged."

The reader will do well to bear in mind the information contained in this extract, as he will find, that it is more than once referred to, in the course of the following pages, and that in several instances, the conclusions drawn are to a certain extent founded on it, or in some way connected with it. It may at the same time be right to caution him that it is merely given as an example, and that in every district throughout India the relative proportions vary, particularly between the Hindoo and Moohummadan inhabitants.

X Confinement in jail may be said to be almost the universal punishment in India. For all crimes of a more heinous nature, it almost necessarily forms a portion of the penalty, and for those even of a slight nature, it is often impossible to dispense with it,* the natives of India being either generally so poor, or so addicted to money, that it is impossible to get the lower orders of them to pay a fine of even the most trifling amount. Though imprisonment in jail would thus appear to be forced on our adoption, as a mode of punishing offenders against the law, there can be little doubt, that it is not a judicious one. A numerous class of persons are thus removed from the management of their families, and of their private

* This is now less the case than before, corporal punishment having been ordered to be resumed in the administration of justice in the Criminal Courts.

affairs; they are employed on works, and in a mode, by which their labour is rendered comparatively unproductive;* there is too much reason to believe, that our convicts, by the time they come to leave our jails, are not improved in their morals; the punishment is too frequently had recourse to, to be attended with great disgrace; and finally, it possesses the great disadvantage of inflicting a much greater degree of suffering, than it appears to others actually to do.

That incarceration to the natives of India is attended with much misery can scarcely be doubted. We all know how acute and how deadly their sentiments of jealousy frequently are, and can thence readily infer how strong must be their feelings of domestic attachment. There are few of them, who are not married and have families; from these they are necessarily separated, and it too frequently happens, that they have to leave them to indigence and beggary. There are too the anxiety and suspense before trial, and the utter ruin entailed by bribing

* In how far it is productive will be apparent from the following passage. "Thus a month's work of a convict is equal to 21 days work of a day laborer for the month of 21 working days, therefore the extra charge of the convict being in the Lower Provinces two rupees, the extra charge for each of his working days is more than an anna and a half, that is more than the daily wages of a free laborer, unless therefore it be maintained that one convict in irons does as much work in one day, as one free laborer will do, it must be admitted that it is a waste of money to employ convicts in road-gangs."—*Pris. Discip. Committee's Report, vide par. 126.*

almost every individual, with whom they are brought into contact, both before and after it. It will be judged then, and there is scarcely reason to doubt of the accuracy of the supposition, that there is great room for the depressing passions to exert a powerful and deleterious influence, on the health of the class of persons under consideration. It is true, that the power of the native of enduring suffering often enables him to bear up comparatively well, when in health; but when that support gives way, these powerful agents, in the production of disease, exert their influence with redoubled effect.

Akin to these domestic anxieties, the result of separation from those held most dear, may be reckoned a still more powerful agent. I allude to extreme changes of climate or mode of life. To incarcerate the inhabitant of the hilly tracts of Ramghur or Bhaugulpore, (and there are many other districts, of which the same thing might be said,) in a jail, situated in the plains, is tantamount to condemning him to death. The climate is different from that, to which he has been accustomed; but more than that, these untutored beings have been accustomed to a mode of life nearly as roving, as that of the wild beasts, which infest the countries, they inhabit. In such cases, disease and the depressing passions operate with almost incontrollable power; for change of climate itself, and that too in instances, in which we would *a priori* be little apt to suspect its influence, is a fruitful source of disease. We might expect, that a change from the plains to the hills would be equally

beneficial to a native of the former, as to ourselves; and yet it is not so; for a residence in the hills is little less injurious to him, than a residence in the plains is to the half-savage inhabitant of a mountainous region. The means of avoiding this baneful and destructive influence is not difficult, and yet perhaps in many instances, it has not been had recourse to, until a degree of mischief, shocking to every feeling of humanity, has been committed. It is almost superfluous to say, that the prophylactic measure hinted at, is the establishment of a subsidiary jail in a suitable part of the country, under the medical management of an able and intelligent native doctor. The following sentiments conveyed in a report to Government, from the late Mr. Scott, Commissioner in Assam, are too much in unison with those, which have been already expressed, to be omitted in this place. Speaking of the great mortality, which took place at Gowhattee in Assam, in 1829-30, Mr. Scott remarks: "The evil I shall endeavour to mitigate, by removing as many prisoners as possible into the hills, where the deaths are much less frequent, than at Gowhattee; but I cannot conceal from His Lordship in Council, that after past experience, I can entertain no reasonable hope of any material reduction of mortality taking place amongst those, who must necessarily remain in Assam, and who cannot, at the most moderate computation, amount to less than four hundred."

"To the natives incarceration brings with it, likewise, a total change of habits. The number of their

daily meals, and the hours of taking them, are altered; their modes and hours of labour, and the whole of their domestic economy: but these are topics which will be discussed, at full length, under their appropriate heads. In addition to these, many of the inmates of our jails have been accustomed to the use, or rather to the abuse, of spirituous liquors, or to that of some other intoxicating drug, and suffer afterwards in confinement, more or less, from the want of it. In many of the districts of Bengal, and in other parts of India, Opium would appear to be extensively used by the natives, and experience would seem to prove, that no opium-eater, of any standing, can be altogether, and at once deprived of this drug, without the most pernicious and detrimental effects to his health. The symptoms, resulting from the deprivation of this drug to those accustomed to its use, appear to be similar, but in an aggravated degree, to those resulting from discontinuing the use of tobacco, or any other powerful narcotic stimulant. The unfortunate person is overpowered by feelings of listlessness and languor, the mental powers become less acute, and these symptoms are sooner or later, in the opium-eater, followed by an irritable state of the primæ viæ, which, if not speedily attended to, and corrected, at no great distance of time, hurries the victim to his grave.* Under such circumstances, it is not exactly

* The following account of the symptoms resulting from the deprivation of opium in those, who have been accustomed to its use, from the pen of Dr. Lamb of Dacca, is so graphic, that no apology is necessary

an easy matter to determine how to act. It is scarcely accordant with our opinions of propriety, to encourage, or even to tolerate, the use of this pernicious drug, or any other possessing similar properties, among prisoners; we have, however, but a choice of evils, and it is perhaps better to wink at the practice, than to witness the numerous victims, who would otherwise fall sacrifices to this degrading habit. The observations of Dr. Tweedie and Dr. Lamb of Dacca are authoritative on this subject, and we have only

for transferring it to my pages: "At first, when the loss of the accustomed stimulus is felt, there is depression of spirits, languor, yawning, giddiness, discharge of water from the eyes, pains in the limbs, burning of the hands and feet; then succeed slight twitchings of the tendons, loss of appetite, tumidity of the abdomen, costiveness, pain at the umbilicus, and lastly looseness, especially at night; and want of sleep. These symptoms in many cases continue for months, till the constitution overcomes the evil partially or entirely. Of the number I examined, only two men asserted, that they had experienced all the symptoms above described, and recovered their strength and appetite, and afterwards felt no inclination to revert to their old habits. The remainder were still suffering, in proportion to the length of time, they had been habituated to the drug."

For farther information on this subject, see Dr. Lamb's report on the sickness prevailing at Gowhattee, from which it appears, that opium is extensively used in the eastern districts of Bengal. Whether in the eastern or the western hemisphere, the same love of inebriation marks the approach to the savage state. Were it confined to this state, we should be less inclined to complain; but alas! it would appear from Dr. Lamb's account, that in the town of Dacca alone, upwards of one maund or eighty pounds weight of opium is monthly purchased of the Government, by the licensed venders of this valuable, but abused drug. A

to take care, that the accustomed stimulant is not too suddenly withdrawn, or too long withheld.* For my part, in districts, in which the use of opium is general, I would permit the drug to be sold to those accustomed to it, in the same manner, as tobacco or any other article of the sort; that is, so long as the prisoners are allowed rations in money: should however a change in that respect hereafter be made, perhaps it might, with more propriety, be left to the medical establishment to provide for the wants of such persons.

* In some districts, particularly in Assam, the prisoner is frequently in a debilitated state from the habitual use of opium, and probably from the use of some alkaline carbonate instead of table salt; such states should be attended to and corrected; but to deprive a person so circumstanced entirely of opium, would probably be to insure his sickness, if not death.

CHAPTER III.

Of the Housing of Prisoners.

BUT it is now time, that we should proceed to the several principal heads, which have been laid down for our consideration, in treating of this subject. The first of these in order, which presents itself, is the housing of prisoners. It is almost supererogatory to remark, that every jail ought to be situated in an elevated, dry, and open exposure, at a distance from all swamps, jheels, and rice-grounds, or any thing else, such as jungle, likely to generate malaria. The ground around it, ought, at the same time, to be kept clear, and nothing like an unnecessary body of water, or broken ground likely to harbour filth of any description, suffered to exist in the neighbourhood. Every jail, at the same time, ought to be able to command a full and free supply of good pure water. The building ought of course to be spacious, in proportion to the number it is intended to contain. The following remarks from the pen of the late Dr. Hennen, on a subject not very dissimilar to the present, are highly interesting and appropriate, and far more instructive, than any thing, I could offer of my own, on the subject.

“ In calculating the accommodation of an hospital, the rooms should be appropriated to the number of patients, by measurement, or estimate of the number of cubic feet in each; thus, a room 10 feet high, 16

long, and 10 broad, contains 1,600 cubic feet. Allowing 800 cubic feet for each patient, such a ward will accommodate two extremely well. Sometimes we are forced to occupy smaller bounds; and in a room of the dimensions described, we would be obliged to place three beds, thus reducing the allowance of air very considerably. It should be a general rule, that where there are any fractional parts above the specific allowance, such fractions should be always allowed, as an equivalent to the portion of air displaced by the bedsteads, tables, forms, &c. Whatever the height or cubic contents of a room may be, each bed should have a space of at least 6 feet by 6, or 36 superficial square; in rooms with low ceilings, 8 by 8, or 64 feet, and as much more as possible: the beds should never touch each other, or be distributed in pairs, as is sometimes to be seen in civil hospitals. An invariable rule should be, never to crowd, and to let each bedstead be completely isolated, without communication with either walls, pillars, or the other beds in its neighbourhood; to place it out of a direct current, affecting the body of the person who lies in it, but to admit as much air as possible above, below, and around it; to shift it often, so as to clean beneath it; and, whenever it can be done, to remove the bedding, and let it remain in the open air, or else to fold it up, in such a manner, that the air may freely perflate it, while it lies unoccupied on the bedstead. Tenon, from whose work a vast deal of useful information may be derived, states, as the lowest allowance proper for each convalescent

patient, $6\frac{1}{2}$ cubic French toises, each toise equal to 76·734 English inches, and 7 cubic toises for each sick patient, and, in proportion as that allowance has been greater, so, he says, has been the healthfulness of the hospital*. I should recommend never to crowd patients, under any circumstances, "where it can be avoided, in a space of less extent, than the highest recommended by Tenon, and, it possible, to give them 800 cubic feet of air, except the means of ventilation by cross windows, doors, fire-places, &c. are peculiarly good†."

From the replies of Medical Officers to the circular of the Medical Board, it would appear, that in very few of the jails in India is the allowance of air to each prisoner above five hundred cubic feet—a proportion, which I am inclined to think, considerably too small. In some instances, the space is said to be even less than three hundred, an allowance, which would be so small, that it is impossible to conceive, that the statement has not arisen, from some oversight or mistake in making the calculation. The subject is one of great importance, and worthy of farther investigation; for, if under such circumstances, unusual sickness and mortality should prevail, it is only what the warning voice of the most experienced writers has taught us to expect.

* See Tenon, *Memoires sur les Hospitaux de Paris*, 4to. Paris, 1788, p. 193, et seq. Universal experience proves the justice of Tenon's remark.

† Vide Hennen's *Principles of Military Surgery*, page 52.

Formerly in England, from over-crowding and defective ventilation, "Infectious disorders were nourished within the jails, which not only often depopulated them, but sometimes extended their ravages beyond the jail walls. Thus practically the penalty of the law was more cruel in a civilized and Christian country, than it usually was under an Asiatic despot, and it was at the same time ineffacious for all good, and fearfully efficacious for all bad results to society. This disgrace was not wiped away, till the inoffensive part of the community found out, that true economy consists with a liberal expenditure of money in the treatment of offenders."—*Prison Discipline Committee's Report*, par. 315.

Of the principle, on which many, if not all our Indian jails have been constructed, we may gather some idea from the following passage extracted from the same authority, vide par. 302. "It was intended when the present jails were built, that the whole of the working prisoners, when not sent to work in parties at a distance from the jails, should be on the roads from morning to evening; that when off work they should eat and remain altogether, in the large open spaces within the outer walls; and that they should sleep almost as closely, as they could pack in the wards at night. It is evident that a jail, calculated to confine any given number in this manner, will not be capable of confining nearly an equal number in the manner, in which we propose to confine criminal prisoners, who are all to remain in

jail, day and night, at work, and off work, and separated into proper classes."

We have seen, that in the Military Hospitals of Europe, from six hundred to nine hundred cubic feet of air are considered necessary for each individual; and I am not prepared to say, that much less should be made to suffice in this country. It is true, that in India the temperature of the atmosphere is higher, and that the diet of the inhabitants partakes more of a vegetable nature, both of which circumstances would appear to render a less supply of oxygen necessary; but on the other hand the animal heat generated is rapidly carried off by perspiration, and consequent evaporation, and the air being more rare may naturally be supposed, in a given space, to contain a smaller proportion of that essential ingredient to life.* In India, no doubt, from the structure of our dwellings the circulation of the air is much more free, which would appear to be a positive advantage, which we possess over the inhabitants of colder climates, and ought accordingly to render a somewhat smaller allowance of space adequate to the preservation of health; I question, however, if this ought ever to be reduced below six hundred cubic feet, per man.

Next in importance to every jail's containing adequate space, is that its wards should be freely

* The difference is said to be equal to a twentieth; so that a human being, *ceteris paribus*, would appear to require an allowance of one twentieth more of atmospheric air, for the due support of life in India, than in Europe.

perflated. In fact, the ventilation of jails and jail hospitals is a subject, on which too much attention cannot be bestowed. It is essential on the one hand, that the prisoners should not be unnecessarily exposed to the vicissitudes and inclemencies of the weather, and on the other, that they should have the means of breathing a pure and wholesome atmosphere. The wards of our jails are generally well provided with door-ways, and were the side-walls, on each side of the beams, generally perforated, so as to allow the heated air to escape, and to occasion some little current, perhaps little, in this respect, would remain to be desired.

Our Indian jails are generally surrounded by a high outer wall or enclosure, and if this is unfortunately built too near, it cannot do otherwise than effectually keep off any breeze, that there may be. There are few, even in the best ventilated houses, who have not, at certain seasons, experienced how almost insupportably oppressive the nights in India are, and who cannot consequently form some opinion of what suffering must be experienced, where perhaps a hundred human beings or upwards are crowded together, nearly as close as they can lie, in a ward almost inaccessible to the air. I should be sorry, however, to be understood to be an enemy to the high outer wall or enclosure. If built at a sufficient distance from the wards of the jail, it is often highly advantageous, as adding greatly to security against escape, and thus admitting of a degree of liberty being given to the prisoners, when the jail happens to be crowded, or

the season exceeding sultry at night, which cannot fail of being highly conducive to their health. I have heard of instances in point, though not on medical authority, where sickness prevailed to a great extent during the hot-season, and where it was effectually checked, by allowing the prisoners to sleep in the open area, around the jail, a prophylactic measure, which I would strongly recommend to be adopted, in all practicable cases, wherever unusual sickness can be supposed to arise from a too crowded state. There must however be no sub-divisions of area by walls; such a Jail as that proposed by the Prison Discipline Committee* would be uninhabitable, partitions however by means of high iron railings might be more admissible, if deemed necessary. From the report of Dr. Lamb, it would appear, that from the want of a high protecting wall of the sort, the prisoners at the Civil Station of Malda are strung every night in a body, on an iron chain; a measure of precaution; which, however necessary, cannot be otherwise than shocking to the feelings of humanity, particularly where the remedy

* "Neither security nor economy can be provided for, until the prisoners are broken up into such small distinct bodies, as to be no longer objects of such constant dread, on the part of those who have the management of them. To do this, it will be necessary by building high partition walls, to divide the great area of the Jail into a number of compartments, we do not think that more than fifty men can with any propriety be allowed to inhabit one yard, and we are inclined to think that the number of each party should be still fewer." — *Prison Discip. Committee's Report*, para. 146.

is so easy of attainment. The word chain falls gratefully on the ear, especially of an European, and I doubt not, that the moment this meets the eye of authority, it will be the last opportunity which will offer of making a similar complaint.

With the appearance and construction of our jails, there would appear to the superficial observer to be less cause to find fault, than with any other portion of our jail system; and yet such is not the case. It is true, that these structures are in many instances more like palaces than jails, and yet they might perhaps, notwithstanding the humane and munificent intentions of Government, be more aptly compared to splendid sepulchres; the buildings are solid and imposing in appearance, but they are too often, if not generally, ill adapted to the purposes contemplated, or for the inmates, whom they are intended to contain. The reason of this I hope to be able to make sufficiently apparent, in the course of these remarks. The natives of India, or that portion of them, of which the inmates of our jails principally consist, are accustomed to sleep in the hot-season, in the open air, and during the rains, and cold-season or winter, in small huts, which cannot fail to be exceedingly warm. In either case, they sleep on the bare ground, which being an indifferent conductor of caloric very rapidly becomes of the same temperature as themselves. The very reverse of this is the case in jail. The floors are often not sufficiently raised, or perhaps are not flued, a measure of essential importance, and are in

consequence naturally damp. They consist either of stone, of tiles, or of masonry plastered over, so as to present a smooth and well polished surface; this latter description, we are in the habit of calling a *puckah* floor or terrace. For purposes of cleanliness, it must be admitted, that these are well calculated, particularly the first and last; but when we come to consider them in a medical point of view, and to reflect, that the convicts sleep on these floors, with generally no covering whatever; but the *dhotee*, or cloth around their loins, the case is very different. The three different kinds of floor all attract moisture from the atmosphere in great quantity, so that it cannot be particularly safe to sleep on them, at any time; but much less so, when the air is loaded with moisture, or when the temperature happens to be low. The natives of India, and those of Bengal in particular, are a weakly race, and at such seasons, the little animal heat, which they generate, is carried off by these floors, as speedily as formed, and their health suffers proportionally in consequence.* If it

* Perhaps the general introduction of the asphaltic mastic in the flooring of Jails and Hospitals might go far to mitigate if not to obviate the inconveniences and objections now mentioned. For the following valuable note on that subject I am indebted to that excellent Officer, Captain Goodwyn, of the Engineers: "There is no doubt as to the value of the asphalt for entirely obstructing damp and the prevention of the ravages of white ants.

I have had it in a previously damp godown for two years, and stores have been preserved when similar ones, before the asphalt was laid down, were destroyed.

is attempted to remedy this state of things, by the introduction of country *charpoys*, we have other difficulties to contend with. The natives have a great aversion to them, and to say the truth, there is great reason, why they should not like them. The bottom being composed of an open netting of country twine, and the native having no bed clothes, he is thus elevated from the ground, as it were, and exposed on all sides, to every breeze that can blow. They are besides open to other objections, which will be pointed out hereafter, from the very faulty and

It is invaluable in baths, on roofs, and terraces.

There is one objection as at present laid down, the great heat of the hot weather here, acts sufficiently on the mastic to cause indentures from continual pressure, thus the sharp feet of heavy almira's or large beds would partly sink into it, probably a quarter of an inch. This can be obviated by having broad bearings for such articles. The remedy I propose to apply is pounded stone, or stone broken very fine, mixed with the mastic, so as to reduce the proportion of tar. Even in the hottest weather the slab laid down in the Fort, though it would yield to hard pressure by day, yet at sunset is as hard as granite.

Hence in the hills it would be invaluable for all purposes.

I have floored the Dissecting-room of the Medical College with it lately.*

Altogether I consider its introduction for Hospitals, Jails, Barracks, and Store Rooms, as of first rate importance.

It is exceedingly cleanly too; for roofing it is excellent material, as such a roof can never leak. There are such a variety of modes of applying it, that I can scarcely mention them here. I am going to try it on the platform of a Suspension Bridge, thickly mixed with broken stone. This I am sure will answer." The floors of Jails and Hospitals not being exposed to the action of the sun would probably not be open to the objection stated.

* This floor I understand answers perfectly.

imperfect manner, in which they are generally constructed.

Mr. Kean appears clearly to have seen the great objection, to which the present modes of flooring are open, in the respect now under consideration, and he attempted to remedy it, by covering the floor with a coating of earth, a measure, which was undoubtedly well calculated to effect the object in view, by rendering the floor a much inferior conductor of caloric, and much less liable to be affected by the vicissitudes of the weather. It cannot be denied however, that the plan in question is not well adapted, for purposes of cleanliness, and that in consequence, it is itself open to objection. The rapid abstraction of caloric from the body is not however the sole evil, to which sleeping on the floor conduces. In a crowded jail, the atmosphere very soon becomes contaminated, and the noxious gases or effluvia, being heavier than the other constituents of the atmosphere, gravitate, and thus expose the inmates to breathe a tainted and vitiated air. This double objection to sleeping on the floor, it has been proposed to obviate, by the introduction of *muchauns* or raised platforms of bamboo, on which the prisoners might sleep, and it is impossible to deny, that it would, in some respects, be an essential improvement. Such platforms however, not being moveable, are apt to conceal dust, and dirt of all sorts, and are consequently ill adapted either for jails or for hospitals; they are besides, in common with the country *charpoy*, open to the objection of harbouring bugs

and vermin, which sometimes interfere essentially with the comfort of the sick. Fortunately a substitute is not very difficult to be obtained, and one, which I have no hesitation in saying, would answer the purpose in every respect, without being open to a single objection, that I am aware of, not even to that of expense. The measure proposed is the introduction of boarded cots or trestles into all jails, and jail-hospitals, but particularly into the latter. The advantages of boarded cots are numerous; they could be prepared at a price very little exceeding that of the common country *charpoy*, and being of an uniform size, (say six feet four inches, by two feet ten inches, and fourteen inches high), they could be placed together, so as to form a continuous platform, and again separated, from time to time, as occasion might require, either for the purposes of cleanliness, or with the view of isolating a particular individual. The prisoners would thus be raised, in sleeping, above the deleterious effluvia, which hover along the floor; they would sleep on a dry non-conducting substance, not liable to be affected by the weather, and would thus be comparatively warm and comfortable. In addition to this, in sitting they would not be subjected, as they are at present, to rest their bare feet, on a cold stone or *pyckah* floor, which cannot be otherwise than highly detrimental to persons, who have never before been accustomed to it.

There are few persons, who have seen a patient in the last or even the advanced stages of dysentery, his pulse perhaps so low, as only to be felt in the sun,

with his feet projecting through the netting of the common *charpoy*, cold and without covering, who have not felt convinced of its unsuitableness for hospital purposes, jail or battalion; but particularly the former. Let Government then give a fair trial to boarded cots, which would be far more durable, and I am inclined to think, in the end less expensive, and if they are not found to answer, I shall be very much disappointed.

The several modes of roofing in use, in the construction of our jails, with reference to the native habits and constitution are perhaps not altogether unobjectionable; but when we come to consider, that security against escape must ever form a primary object of attention, and the miserable consequences, which could not fail to result, were fire to break out, we shall be satisfied, that the common flat terraced roof is to be preferred.

The wards, or rather the windows, of all jails, it is to be supposed, are provided with gratings of iron; whether these of themselves are sufficient, without any other sort of door, seems to be a matter of dispute. On the one hand, it is contended, that these door-ways, in addition to the gratings, should be fitted with pannelled doors, as being more durable than any other, and more effectually enabling the inmates to admit the external air, or to exclude atmospheric vicissitudes, as reason and inclination might dictate. For this purpose, there can be no doubt, that they are well calculated. On the other hand, it is maintained, that these doors, furnish

an ample means of the strong oppressing and extorting money from their weaker associates; but surely men will not be found generally, nor even frequently to punish themselves, with the view of giving pain or annoyance to others. I should accordingly have no hesitation in giving it as my opinion, that pannelled, or venetian doors would not only add to the comfort, but to the healthiness of prisoners. . . .

To those, who are familiar with jails and jail hospitals in this country, it must be superfluous to say, that the floors of the wards, early in the morning, are often in a very loathsome and offensive state, evincing the necessity, in so far as health, decency and cleanliness are concerned, of devising some improvement, in the mode of providing for contingencies of the sort. To every ward, in my opinion, there ought to be attached a recess fitted with a copper trough or pan, to which such of the convicts as had occasion might resort at night; it ought however to be entirely separated, and detached from the body of the ward, by a pannelled door, so as to be as little offensive as possible.*

In addition to this, every ward ought to be lighted at night, so that the prisoners might be able to move about, or to assist each other in the event of sickness.

* Prisons of this description have been sanctioned by the Government of Bengal, and will be attached to all Jail Hospitals when applied for—vide Letter of the Medical Board No. 18, dated the 31st March 1843, Letter of the Government of Bengal No. 991, dated the 3d of July 1843, and the letter of the Military Board No. 1299, dated the 24th of June 1843.

For the same reason one or more of the police persons ought to be made to sleep in each of the wards, or close at hand, so as to be able to procure medical assistance, should it be required, without a moment's delay.

The necessity of cleanliness in all respects, but more especially in regard to the sewers in, and around jails, is so obvious, that I consider it unnecessary to enter at length on the subject. If these are allowed to fall into a dirty and offensive state, not only will cases of disease spring up, which would not otherwise have appeared ; but others, which had else been of a mild nature, will become comparatively intractable, and a vast increase of mortality will in consequence result.

All jails and jail hospitals ought to be adequately provided with cooking sheds, and the interior of the whole of the buildings ought to be white-washed throughout, at least once, in the course of each year, and the lower half of the walls which are most apt to get soiled, at least twice a year, if not oftener : but it is now time, that we should proceed to the second general head, which we have laid down for our consideration.

CHAPTER IV.

Of the Working of Prisoners.

THE working of convicts, in this country, is one of the most important points connected with their management. To enable us to judge in some measure dispassionately on the subject, and of the quantity of labour, which ought to be exacted of them, let us consider what is performed by the peasantry of the country, whose lives, like those of the lower orders of all other countries, may be said to be comprised in one word, "Labour." The hired labourer of India either commences work, about half an hour after sun-rise, and continues it, till 11 o'clock A. M., when he cooks a meal, and resumes his employment at 1 o'clock P. M. continuing it, till 5 o'clock P. M., or he commences at 10 o'clock A. M., and continues uninterruptedly at labour, till 5 o'clock P. M. Let us compare this, with what is exacted of the convict. He is taken out of the jail at sun-rise, or before it; he labours uninterruptedly all day, with the exception of an hour perhaps at noon, (for I am not sure, that this indulgence is in every case allowed,) when he generally satisfies the cravings of hunger, with a little parched gram, (a species of pulse) or rice, or perhaps with these grains in a perfectly raw state. He then continues to labour on, till 4 o'clock P. M., when he commences his return to jail; but this may

be at some distance, so that by the time he reaches it, and the whole of the prisoners are counted over, it is often near sun-set. They have then their sole meal to prepare and eat, before they are locked up for the night. All this, it is to be recollected, is exacted from a class of persons, who are frequently the most prone to disease, from their previous habits of dissipation; who are suffering much mental anxiety and distress; who are scantily fed; who enjoy no reward for their labour, and who, in addition to every thing else, are working heavily ironed. Many of these persons too, be it remembered, are considerably advanced in years, and to a still greater number, the mode of labour, to which they are forced, is totally new and unaccustomed.

There are perhaps few men, until they have become in some measure used to it, who could continue on their legs, during the whole day, heavily ironed as these men are, even were no work whatever exacted of them: in short, we may attempt to disguise it from ourselves, as we like; but the impression is strong on my mind, that the convicts are overworked, and that many of them are destroyed in consequence.*

* For farther information on this subject see the following paras. of the Prison Discipline Committee's Report:

131. "We regard the employment of convicts on the roads as, without exception, the worst method of treatment that has ever been provided under the British Government for this class of persons. It seems to us to unite in itself every evil of imprisonment, under the worst system of discipline, or under no system of discipline, and to possess in

From the following remarks of the Superintending Surgeon of the Agra circle, (vide his quarterly return of jail hospitals, dated the 1st October, 1834,) there would appear to be little doubt; but in his opinion, there is an unnecessary waste of life. "At Bulundshuhur," he observes, "the sickness and mortality among the prisoners on the Allahabad and Delhi road have been great, and I think, may be attributed to the following causes. They have been almost without clothing; the huts were not ready till after the rains had for some time set in, consequently they must have been damp and unwholesome. I think also, that the vicissitudes of temperature, to which the

a very slight degree any of the advantages of this punishment; whilst it renders any improvement of discipline absolutely impossible.

135. "The observations above made apply to the system universally. The frightful mortality which has before been shown to be caused by sending prisoners to road-gangs, in certain tracts of country, cannot fairly be used as an argument against the system universally; but wherever this argument does apply in any material degree, it appears to us that, even if the employment of convicts on the public roads were shewn to be more generally advantageous, than it has ever been pretended that it is, still the enforcement of the system, in such cases, would be absolutely unjustifiable.

112. "If fair allowance be made for deaths occurring after a return to gaol, in consequence of diseases caught on the roads, it will be evident that the chance of death is so much increased by sending a batch of Bengal convicts to a road-gang that, when the term of imprisonment is long, what was intended for a secondary punishment by the Judge, is, in respect to many of the prisoners so sent, converted into a capital punishment.

prisoners are exposed, during the rains, is very detrimental to their health, and that until they are allowed to go during that season, to their respective zillahs, where they can have proper accommodation, the mortality will be always considerable.

Other quotations, more in point, might be added; but to what purpose. There is little doubt, that the mortality among non-working convicts, females and debtors, is much less, than among those condemned to labour. Mr. Kean's statistics show, that of 21 females, there were none sick; of 43 debtors, there

113. "But a fair judgment cannot be formed on this point from the mere average result." Inequality and uncertainty, (which are worse elements in any punishment, even than unnecessary severity,) being apparent in an extreme degree upon the face of our returns, it is necessary to examine the extreme cases. In one gang employed under Captain Thomson in the Ramghur Division of the Trunk Road, the number of convicts who died whilst actually belonging to the gang, averaged for ten months at the rate of $34\frac{4}{5}$ ths of deaths per cent. per annum. In one month the deaths in that gang were 10 per cent. * * *

138. "Such being our opinion of this plan, thinking it, as we do, to be incompatible with any improvement of prison-discipline, it is our earnest recommendation that the entire system be put an end to with as little delay as possible. Such would be our recommendation if we thought that a financial loss would be the consequence; for we cannot think, that the duty which a state owes to those, whom it is obliged to deprive of liberty can properly be abandoned because of a small charge which the misuse of those unfortunate people might save. We cannot, therefore, but rejoice that it is in the power of Government to do so great a moral good, with direct pecuniary advantage." * * *

"Great gangs I believe are now never employed on the roads beyond the limits of their own districts."

was only one sick, or one in 43; and among 78 non-labouring convicts, 2 sick, or 1 in 39; while of 305 labouring convicts, there were 26 sick, or 1 in 11½. The mortality among these different classes, Mr. Kean was unfortunately not able to ascertain; but if any doubt exists of the conclusion which I have drawn, let returns of the comparative mortality prevailing among the great gangs employed on the roads, and the convicts in the adjacent jails, be called for, or even among the different classes of prisoners in the same jails; I for one shall be delighted to find that I have been in error; should such fortunately prove to be the case. Small detached working gangs are similarly situated, and frequently, if not generally, suffer in proportion. These are detached to a distance, with often no medical assistance,* and with only the number of police peons necessary for their custody. They are heavily worked, and perhaps badly paid; and if one falls ill, the person in charge is either unable, to judge of the urgency of the case, or conveniently to spare the necessary attendants to escort the sick person to the station hospital. The case is thus frequently allowed to assume such a form, as to render recovery doubtful, or even hopeless.

If the work of convicts be thus costly, and occasionally productive of so deplorable results, we should

* A native doctor has since been humanely sanctioned by Government to every gang of upwards of 50 prisoners, which may happen to be detached for any length of time, beyond the reach of immediate assistance from an European medical officer.

at least expect, that it would be judiciously applied; and yet there is great reason to believe, that this is frequently not the case. Sometimes they are obliged to walk for miles to their work, heavily fettered as they are, instead of being accommodated in tents close to it; at others, they are unprofitably, and unproductively employed, in carrying small baskets of bricks for the repair of the roads, for miles, when a hackery, which would carry as much as fifty of them, might be hired for a few annas. A reference to the able report of Mr. Macpherson will show, that this is no imaginary case.

From the replies of medical officers, it would likewise appear, that sufficient attention is not paid to the seasons, in the working of convicts. In the rains, they are generally, if not always taken out, unless it actually happens to rain at the time, they would otherwise be leaving the jail: they frequently come home drenched with rain, and few of them, I should suppose, are very well prepared with a change of apparel. Again, in the hot-season, too little attention is paid to the excessive heats, that frequently prevail, and sporadic cases of Cholera, and Coup de Soleil are not unfrequent, in consequence.

In respect to the working of convicts then, there can be no doubt, that there is great room for improvement. Less, or at least not more ought to be exacted of them, than the peasantry of the country are in the habit of performing. During two-thirds of the year, it will be quite sufficient, and as much as they are able to endure, if they are worked from sun-rise

in the morning, till 11 o'clock A. M., and again, from 1 o'clock till 4 o'clock P. M.; and during the remaining third, or hot season, from sun-rise in the morning, till 10 o'clock A. M., and afterwards, from 3 till 5 o'clock P. M., if employed exposed to the sun. It would perhaps be still better, if they were furnished at that season, and during the rains, with a portion of in-door occupation. A reference to the papers of Dr. Lamb of Dacca, and Mr. Burt of Furreedpore, will show the in-door employments, which are considered most appropriate for prisoners in this country. These are unhusking rice, pounding bricks, the manufacture of baskets, mats, cloth, carpets, gunny bags, towels and paper, or generally, any other useful art, to which they may have been accustomed. Suitable sheds ought of course to be erected for their protection, while so employed. Should the health of those so employed suffer from the confinement, out-door occupation, in the weeding of public gardens, or in dressing the grounds around the different public buildings should be given them, until its re-establishment.

I have purposely refrained from touching on the classification of prisoners; because I have not considered it strictly to belong to this portion of the subject, which I have undertaken to discuss. I may remark, however, that the system of classifying them, according to the period of confinement awarded, scarcely appears to me to be a judicious one.

There is another species of classification, more immediately connected with the working of prisoners,

which is essentially necessary to be attended to, and that is, that the same task or amount of labour shall not be exacted from the debilitated and the robust, from the youthful and the aged ; this ought in every instance, as far as the nature of the labour is concerned to be determined by the judicial officer passing the sentence.

For any other official, short of the magistrate, to exact labour from a prisoner, when not so sentenced, must of course be considered totally inadmissible.

There is another point of considerable importance, in some measure, connected with the subject of the classification of prisoners, and that is, the weight of the fetters, which they ought to wear. In this respect, there ought either to be one uniform standard, or if a difference is considered to be advisable, it ought to be determinate, and fixed by the tribunal, by which the offender may be tried. By a reference to Dr. Strong's report, it will be seen, that the fetters in some instances weigh seven pounds, and in others, seven seers, or perhaps, somewhat more than double the former weight. There is no doubt, that this difference must greatly affect the comfort of the convict, and it is not impossible, that in some instances, if not generally, the greater or less weight of the fetters is made to depend, in a great measure, on the amount of the bribe paid to the jailor. Dr. Strong seems to think, that chain fetters are much more easily worn, than bar fetters ; this might likewise be made the basis of a difference, in the extent of the punishment awarded ; or if that be

deemed inexpedient, and the ignominy, combined with the security of the prisoners, be considered, the only legitimate objects in view, there would appear no just reason, why chain fetters should not be generally, if not invariably, employed.*

Whichever mode of fashioning the irons be adopted, the ankle-rings ought to be well polished, and the part of the leg, against which they are apt to rub, should be protected by leather *mozas* or guards, so as

* Par. 22. We believe that the weight of the fetters used in different districts varies very considerably. In Bengal they ought not, generally, to exceed one seer and a half, or about three pounds troy weight, according to a circular order of the Court of Nizamut Adawlut, dated the 20th of August 1818, but we do not believe that much attention is paid to this order.

Par. 23. We are of opinion that one certain rule of weight ought to be adopted all over India, and we are not aware that any better rule can be adopted than that suggested by the Bengal Committee of convict labor.* It is probable that the use of fetters cannot safely be dispensed with, when prisoners are employed at out-door work; but when they are at work within the gaol, fetters seem unnecessary in any well constructed prison, except for refractory prisoners.

* We recommend the following descriptions and weights of fetters, viz.

" 1. For small, infirm, or quiet prisoners, the chain or linked fetters :

Minimum weight,	¾ seer.
Medium ditto,	1 ditto.
Maximum ditto,	1½ ditto.

" 2. For large, strong, and turbulent prisoners, the chain or linked fetters :

Minimum Weight,	1½ seer.
Medium ditto,	1¾ ditto.
Maximum ditto,	2½ ditto.

" 3. For refractory, insubordinate, and violent prisoners :

• The bar fetter,	2½ seer.
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Vide Prison Discipline Committee's Report.

to preserve it, 'as effectually as possible,' against chafing; two-thirds of the cases in hospital are generally the result of injuries of this nature, and when hospital gangrene breaks out, the ravages, which it commits, among these apparently trifling cases, is truly appalling.

CHAPTER V.

Of the Dieting of Prisoners.

THE system of working the convicts of our jails has been already sufficiently dwelt on, and accordingly I recur to it at present, merely with the view of illustrating the subject of dieting this class of persons.

It will be sufficient to remind the reader, that they are taken out in the morning at sun-rise or a little before it, and that they then proceed to the place, at which it is intended, that they shall labour for the day. This it may be mentioned is often at a considerable distance from the jail, perhaps one, two, or even three miles. The prisoners continue at work, during the whole of the day, till about 4 o'clock in the afternoon; so that they occasionally do not reach the jail, till near sun-set. From the hour they return to the jail, till dusk, is the only time they have in the twenty-four hours to cook, and enjoy their single comfortable daily meal, if so it can be called. I must not however omit to mention, that they are likewise allowed an hour in the middle of the day, to rest, and refresh themselves; that time however is unfortunately so short, as to render it impossible for them to prepare a meal; the utmost accordingly they can do, and what they actually do, is to seat themselves under the shade of the first tree that

offers, and, under this protection from the sun, make a scanty uncooked meal on parched gram or rice, or even on these substances, in a totally raw state. The excessive heat and continued labour have made them of course sufficiently thirsty, and water, not generally of the purest kind, is drank in abundance. The consequences of eating these unwholesome substances on an empty stomach are not difficult to be foreseen, and Cholera, Dysentery, and Diarrhœa, form the most frequent and destructive of jail distempers in the East.

But were this objection obviated, and abundant time, we shall say a couple of hours, granted to the convicts in the middle of the day, to enable them to cook a meal, it is not impossible, nor even improbable, that the evil pointed out, would not be much remedied or ameliorated; for to render the necessary time to enable them to cook of any avail, they must likewise be furnished with the means of procuring the materials of the meal.

There is too much reason to believe, that the allowance at present made to prisoners is too scanty to enable them to cook twice daily. As far as I have been able to learn, the allowance made by Government to convicts, for their subsistence, varies, from two to three pice per diem, that is, a little more or less than one penny. I am not aware of the grounds on which the above trifling variation is founded; but it is more than probable, that it is made to depend on the greater or less price of the necessaries of life, in the different districts throughout the country.

I am inclined to think, that under any circumstances, either of the sums above-mentioned is too small, and undoubtedly the lesser one is so. The lower classes of agricultural labourers in India, and indeed in any country, seldom earn more than is absolutely necessary to support existence, and in scarcely any district of India do they realize less than a couple of annas per diem, or about four rupees per mensem; but let us suppose, that they only earn three rupees per mensem, and let us even suppose, that one rupee of that goes to support their wives and children; still there would remain more than one anna per diem, for their own subsistence—a sum which I feel satisfied will be found, on the whole, not too much.

The agricultural labourer, it ought to be recollected too, has often the means of making his scanty earnings go a great way, by supporting himself and his family, on the produce of his own field,—an advantage which the convict does not of course enjoy; in addition to this, the whole of the latter class are not of the very lowest of the community: many of them have been accustomed to somewhat better fare, and feel in consequence keenly the miseries of their scanty pittance. His own subsistence too, there is great reason to believe, is not the sole object, on which the convict expends the Government allowance. He has his tobacco and the condiments for his food to purchase, and not unlikely, every one connected with him to bribe, from the Burkundauz or police officer, up to the Darogah or keeper of the jail; or he may even divert a trifle of his scanty pittance to the support of his wife

and children; but this, I think it fairly may be presumed, is all but impossible. Avarice likewise sometimes interferes, and prisoners are occasionally found in our jails not otherwise unwell, but in so miserable and emaciated a condition as to give rise to a belief, that they have denied themselves the very necessaries of life, for the sake of hoarding their daily pecuniary allowance, or a portion of it. Such men, it may be supposed, are very liable to disease and are frequently carried off by it.

That the present allowance is far too small, I have endeavoured to prove by the daily gains of the very lowest of the community. Reasoning from analogy, on grounds, which there is every reason to believe are well founded, would lead us to the same conclusion. The unfortunate lunatics, who are confined in the various native insane hospitals throughout the country, who are fed in the most ordinary, and in the cheapest manner, and who do not labour at all, cost the Government upwards of two rupees per mensem each; or rather more than one anna per diem, for food alone; and if we refer to Mr. Kean's excellent report, we shall find, that debtors, who enjoy an allowance of one anna per diem, and Mussulmans, who use a comparatively generous and invigorating diet, are much less subject to sickness than Hindoos. The proportion of sick among the former class of prisoners, (that is debtors,) is only 1 in 43, and in the latter, 1 in 23; whereas among the Hindoos, it is 1 in 13, and among the labouring convicts, 1 in 11½. That the present system of dieting the prisoners, or rather that the present allowance granted them on

that account, is miserable in the extreme; cannot be doubted, and yet it would appear, that some magistrates, with thoughtless zeal, have not hesitated, as a means of punishing them, to curtail the poor pittance, which I have endeavoured to show, is both insufficient to preserve health, and to ward off a fatal termination, when disease actually occurs.

But to return. If these unfortunate creatures escape the dangers of their miserable noon-day repast, they are brought home, often near sun-set. They have then, between that time and dusk, to cook their only meal. This it may be supposed is often not very fully dressed, those who have been labouring all day, are sufficiently hungry; and their appetites are indulged accordingly. They are then locked up for the night, jaded, fatigued, and relaxed, with their stomachs distended with food, to sleep without protection on a cold damp floor of stone or masonry.

The brief period allowed them to cook has been very generally remarked, and it has been proposed to obviate the difficulty, by allowing them cooks, and serving out their meals ready-dressed, on their return to jail, from the labours of the day. The plan could be put in execution with no great difficulty, for a few of the convicts themselves of the better castes might be selected for cooks, and rations might be supplied in kind, instead of in money.

Corruption might even creep into this system; this however might be in a great measure prevented, by feeding the prisoners by contract, and it cannot be denied, that the plan would have many advan-

tages. It would no doubt be disagreeable to the convicts themselves, but as it is, neither our wish, our interest, nor our intention, that our jails should be places of pleasure or enticement; that seeming objection might rather form a reason of some weight for its adoption. There are others moreover of still greater importance. It might in a great measure prevent, or at least diminish, the system of bribery, from the highest to the lowest, which there is now great reason to believe prevails in our jails; and it would at least diminish the facilities, which now exist for the prisoners' diverting the money allowed for their subsistence to other purposes, and some of these occasionally not of the most moral kind.*

Be that as it may, there can be no doubt, that the prisoners should be fed in a manner, if not liberal, at least adequate to the due preservation of their healths. They must be fed in proportion to the labour which is exacted of them, and the greatest care must be taken, that their diet may be as much varied as circumstances will conveniently admit. The erroneousness of the doctrine inculcating uniformity in diet is now uni-

* The fact is, however, the convict is not at liberty to appropriate his three pice to himself. Exaction descends even as low as to him; and he has his part to fulfil in the stupendous system of bribery which pervades all India, whilst the jail shopkeeper makes him feel the disadvantages of privileged trade to the full. His vices too come in the way of his hunger, and rob him of his meals. Upon the whole, therefore, we are inclined to approve of Mr. Hutchinson's proposition, that the convicts should be dieted by contract; but then careful inspection of the contractor's supplies will be required.—*Friend of India*, Aug. 20, 1835.

versally admitted, as calculated to induce scurvy, and the various collateral protean forms which it assumes.

The prisoners should be allowed to cook twice a day, in the morning and near sunset; and finally, the quality of the provisions sold to them, by the jail bunnies, should be inspected daily by the medical officer, or in his absence, by some other responsible person appointed by the magistrate. This precaution will be still more necessary, if the prisoners are fed by contract. Finally, nothing in the shape of green vegetable substances ought to be permitted to be brought near the jail; unless under some sort of assurance, that they will be used for culinary purposes.

From what has now been said, it will be seen, that previous to the publication of the first edition of this work in 1835, the Native prisoners in British India were fed by means of a certain daily pecuniary allowance granted to each, slightly varying in amount, throughout the different districts, and farther that in that work, I recommended in lieu thereof, the adoption of the system of feeding them by means of cooked rations. In 1838 the Committee of Prison Discipline published their Report, and adopted these sentiments, though without any acknowledgment:—the plan had however, before the latter period, been tried in one or two jails, and with a promising degree of encouragement. Shortly after this, it was ordered by Government, to be adopted generally in all jails in this portion of India, and though

slight difficulties opposed themselves in some districts, the general feeling soon became, that a great change had been effected for the better. The Courts of Nizamut Adawlut issued circulars laying down the principle, in regard to the amount of food, on which the prisoners should be dieted, and these instructions, with reference to the amount of information and experience then possessed on the subject, were far from injudicious. Further enquiries however subsequently showed, that considerable difference as to quantity had crept into the dieting of prisoners, in the different districts throughout the country, a difference which was inconsistent with justice, and that in some instances the scale or rate in use was so low, as to be inconsistent with the health of the prisoners.

That in many instances, prisoners of all sorts, and sentenced to imprisonment with labour, and without labour, were put on the same scale of diet; whereas there is no doubt that the diet ought to be proportioned to the amount of labour exacted.

That in most, if not in all instances, prisoners received but one meal a day at 4 or 5 o'clock P. M., and that they were called on to labour during the whole of the day generally in the sun, and on an empty stomach, and that to appease the cravings of hunger they ate parched rice and gram, and drank water, clean or dirty, from the first pool to be found, which occasioned cholera, dysenteries, and diarrhoeas, from which many perished; evils which could not be corrected until the prisoners were allowed two cooked meals a day.

That the state of health of prisoners might *cæteris paribus*, and within certain limits, be said to be in proportion to the more or less generous diet, which they received.

That an inadequate system of dieting induced a scorbutic taint of habit, showing itself in scurvy fevers, diarrhœas, dysenteries, ulcers, hospital gangrene, night blindness, and other diseases proceeding from that class of causes.

That of all the systems of dieting that in use at Allahabad under Dr. Beattie,* seemed most worthy

* LABORING PRISONERS

receive one seer of 80 sicca weight each daily,

viz. 14 chittaks of Atta,

2 ditto of Dal,

$\frac{1}{2}$ chittak of Salt,

one and a quarter seer of Firewood,

per diem.

In addition to the above—

2 chittaks of Ghee,

$\frac{1}{2}$ ditto of Tobacco,

$\frac{1}{2}$ ditto of Chilies,

weekly,

The Ghee is served out on four different occasions during the week.

Two chittaks of rice and as much of vegetables are given twice a week; a deduction of equal weight is made on this account from the 14 chittaks of Atta above specified. A part of the rations, about one-third, is cooked and partaken of in the morning, the remainder when the work of the day is finished.

TABLE 2D

For women and prisoners without labor,

10 chittaks of Atta.

2 ditto of dhal.

Total 12 each per diem.

of attention, but that one and a half seers of fire wood should be allowed, and at least 2 chittacks (or 4 ounces) more of flour to non-labouring convicts. This addition it was supposed would probably enable the prisoners to have two cooked meals a day, instead of one cooked, and one uncooked, the latter being in many if not in most instances destructive to their health.

That whenever prisoners are unduly exposed, over-worked, imperfectly fed, or confined in unsuitable or inadequate prisons they will suffer and fall victims to it.

These and several other points of equal or paramount importance to the administration of justice, and the consideration due to the convict, were forcibly urged on the attention of Government by the Medical Board, in their despatch No. 18, dated the 31st of March 1843, and it gives me the greatest pleasure to add, that their views were met by a corresponding feeling, on the part of the Hon'ble William Wilberforce Bird, Esq., then Deputy Governor of Bengal and President of the Council of India, who issued the

$\frac{1}{2}$ chittak of Salt and 1 seer of firewood for each daily.

$\frac{1}{2}$ chittak of Tobacco and $\frac{1}{2}$ a chittak of Chillies to each, weekly.

2 chittacks of Ghee to each a week, divided into four portions and served out on four occasions.

Two chittacks of Rice and as much of vegetables are given to each convict twice a week. A deduction of equal weight is made from the total 12 chittacks of Atta and Dhal above specified.

None of the prisoners in this Zillah receive rations in money.

necessary orders for all prisoners to be allowed two cooked meals per diem, as well as for other improvements in jail management, not necessarily connected with this branch of our subject. This humane measure forms a suitable accompaniment to the other great act of this good, and able man's short administration of the affairs of India, viz., the abolition of Slavery throughout India, and both are worthy, and deserving of adding still farther honor and respect to the name of Wilberforce. In accordance with this Resolution of Government, the Medical Board drew up a diet table which is here given, and offered the following suggestions for its being carried into effect, viz.

That one cooked meal be allowed before, and another after labour during the day, in quantity and variety agreeable to the annexed table. The quality of the food to be under unremitted supervision, and its preparation by the convict cooks to be well attended to, and care taken, that each individual receive his due share.

Water if not at hand, and procurable of good quality from wells, tanks or rivers, to be brought by convicts in jars or earthen vessels from the nearest spot where good water is procurable, to enable the working prisoners to quench their thirst with wholesome drink during the day.

Prisoners to be permitted to take with them any remaining portion of the morning's cooked meal, and to eat it whenever inclined during the period of labour. Raw or parched grain to be prohibited.

TABLE

Exhibiting the quantity and variety of Food, which are necessary in the opinion of the Medical Board for the preservation of the health of labouring and non-labouring Convicts in Jail.

FOET WILLIAM, CALCUTTA, 17TH SEPTEMBER, 1843.

NON-LABOURING CONVICTS.									
MORNING MEAL.					EVENING MEAL.				
Rice.	Dall.	Vegetables.	Ghee.	Salt.	Mussallah per Diem.	Total of each.			
Ch.	Ch.	Ch.	Ch.	Ch.	Ch.	Chittacks.			
5	1	0	0	+	+	6½			
Rice.	Dall.	Vegetables.	Ghee.	Salt.	Mussallah per Diem.	Total of each.	Chittacks.	Chittacks.	Chittacks.
Ch.	Ch.	Ch.	Ch.	Ch.	Ch.	Chittacks.	Chittacks.	Chittacks.	Chittacks.
5	1	0	0	+	+	6½	9½	16	16
WORKING CONVICTS.									
Rice.	Dall.	Vegetables.	Ghee.	Salt.	Mussallah per Diem.	Total of each.			
Ch.	Ch.	Ch.	Ch.	Ch.	Ch.	Chittacks.			
5	2	0	+	+	+	7½			
Rice.	Dall.	Vegetables.	Ghee.	Salt.	Mussallah per Diem.	Total of each.	Chittacks.	Chittacks.	Chittacks.
Ch.	Ch.	Ch.	Ch.	Ch.	Ch.	Chittacks.	Chittacks.	Chittacks.	Chittacks.
5	2	0	+	+	+	7½	14½	22½	22½

Every day the above quantity the same—

Sundays—then the labouring Convicts will receive the same as the non-labouring Convicts. Up Country Prisoners should be allowed Wheat Flour instead of Rice. A small quantity of Tobacco should be allowed—and one and a half seer of Fire-wood—should the Cooks require it.

The above change on alternate days of the week—except on

This diet table has been adopted by the Government, and ordered to be used in all the jails throughout Bengal, and I believe the North Western Provinces, and I am not aware that the sufficiency of the quantities or the quality of the food therein sanctioned, has as yet in any instance been complained of as deficient or inadequate, and I can only express the hope, that it may on farther trial be found to afford more and more satisfaction.

Having now recorded the different steps, in the improvement of the system of dieting in use in jails in India, and I hope they can now be looked upon as nothing more, than by-gone incidents, in the history of general jail amelioration, it may be useful to offer a few farther reflections on the subject, particularly as there are not wanting individuals, who consider that the situation of the convict is not now, but even was formerly sufficiently comfortable. These laudators of the then existing state of things might probably be divided into two classes, viz. men who have not given their attention to the subject, or who, from not being professional men are incapable of forming a correct opinion; and 2ndly, of those who consider that to rail at vice, particularly if personified in a fellow creature, and if possible to sink him still farther in crime and misery, is tantamount to the practice of virtue. The Prison Discipline Committee in their report printed in 1838 at para. 152 observe—"As it appears to us, that which has elsewhere been deemed the first step of prison reform has not now to be taken, in

India. What after many years, was the first good effect of the labors of Howard and Neild, in England, has already been achieved here. There is no systematic carelessness to the circumstances of the prisoner, no niggardly disregard of his natural wants ; he is not left to starve of cold, or hunger, or to live on the charity of individuals : he is not left in filth, and stench, to sink under disease, without an attempt to cure him : he is not compelled to bribe his Goaler, in order to obtain the necessaries which the law allows him." Proof in this case would have been better than assertion, for notwithstanding what the Committee have here stated, they themselves recommended an addition to the clothing of the convict ; the Government, in the exercise of a most wise and humane discretion, have found it necessary to improve his diet ; and they have ordered all jail hospitals to be provided with night privies, as has been already mentioned, to prevent the occurrence of nuisances hostile alike to health and decency.

On the subject of dieting the Committee observe—
 " We think that attention cannot be too much devoted to keeping convicts sufficiently fed to work in health, and just sufficiently supplied with grateful condiments to digest their food, and no more." This few will dispute ; but when they assert that " it cannot be difficult to keep a prisoner in health without giving him a more dainty and generous diet, than nine out of ten of the population of the country can ever indulge in," I must be permitted to express my dissent ; for I believe that

it accords with the opinion of those, who have had most experience in these matters, that it requires a more generous diet to keep a prisoner in health, than it does one who is not suffering from mental distress and depression, and who is at liberty to enjoy change of air and scene, when he thinks proper.*

The Committee go on to observe—"Doubts have been expressed of the propriety of withholding all indulgences, with the view of making a jail terrible, because such a principle if followed, as far as it would legitimately lead, would require us to break the sleep of a prisoner, to flog him daily, to overwork him, to deny him proper food, and by such means to give him as much pain as could be given him, without destroying his health. But in regard to food and work, we are fully prepared to maintain the propriety of giving to a prisoner as little of the one, and as much of the other, as that limitation will allow."† This is not the place to enquire, whether the enforcement of these principles would be most conducive to the reformation of the culprit, although I may ask, with what prospect of success we could urge reformation on an individual, whom we were in every manner endeavouring to irritate and injure—and I shall accordingly confine myself to the argument, as it would affect his bodily health. That the sentiments expressed by the Committee are sufficiently vigorous

* Vide Dr. Coindet's work on the prisons of Geneva.

† Vide Prison Discipline Committee's Report, para. 79.

will perhaps be admitted, but I think they did wisely, in confining their measures of penal severity to such a degree as should be consistent with the health of the prisoner. Nature we know is only capable of endurance to a certain extent, and the Committee were no doubt guided by the experience they had obtained, in their enquiries into the state of Indian Jails, and more particularly into the sickness and mortality, which it has been shown, prevailed among the great gangs employed on the public roads. The experience of that assiduous medical officer and fellow labourer in the cause of Jail improvement in India, Dr. Strong, is most valuable on this subject. In mentioning the result of his experience the Medical Board observe—"It has been proved, that the season was unusually unhealthy throughout the district, and as might have been anticipated an increase took place in the number of sick prisoners, attended with an increased rate of mortality.

"During this sickly period there is little doubt that, if the inhabitants in the vicinity of the jail were attacked, the atmosphere was in a deteriorated state, which must also have had great influence on the health of the prisoners combined with local causes, and this in the opinion of the executive medical officer tended to increase the number of the sick, by predisposing them to attacks of illness.

"The medical officer reported that he considered the local causes to arise in some degree, from the construction of the privies, but chiefly from an

insufficient quantity of food to the laboring prisoners, and he proved by tables, &c. that when a good quantity of animal food was allowed, during a period of twenty-six months, that the mortality was reduced to half of what it had been, for fifteen months before, and for fifteen months after the quantity of animal food was reduced; and that the general sickness was also during the period of generous diet considerably lessened, and the Hospital thinned of patients.

“During the year 1842 the Medical Officer states that the ration of the prisoners was much too small, consisting only of two chittaks of cooked fish twice a week; the dhal reduced two chittacks in quantity, and the ghee also; and given only twice a week.

“It appears from the voluminous correspondence, which has passed from year to year, between the medical officer and the civil authorities, that the former has always recommended a nutritious diet to keep up the strength of the laboring prisoners, and has recommended that two meals a day should be always allowed them, and that eight ounces of cooked fish should be given twice a week, and eight ounces of dhal, with one ounce of ghee in it, on alternate days, with a due proportion of salt and condiments daily.

“We therefore strongly urge the recommendations of the Civil Surgeon to be carried into effect, as the results which he has brought forward to prove that a nutritious diet did preserve the health of the prisoners in a remarkable degree, appear to us to be incapable of disproof.”

If need were for any farther information on this point, the following quotation from Dr. Coindet's able work above alluded to, would go far to settle it :

“ Voyons maintenant quelle influence ces changements dans le régime pénal ont eue sur la santé des détenus.

Du premier Janvier 1827, au premier de 1833, c'est-à-dire pendant une période de six ans, sous le régime mitigé de 1825, la moyenne des journées de maladie a été de 7,19 jours par année, et la mortalité, eu égard à la population moyenne de la prison, de un sur soixante-trois. Les journées de maladies et mortalité ont donc été presque le double de ce qu'elles sont à Genève parmi les hommes de même âge, jouissant de leur liberté.

Du premier Janvier 1833, au premier de 1836, intervalle pendant lequel le régime pénal sévère a été successivement introduit dans les divers quartiers, la moyenne annuelle des journées de maladie a été de 10,18 et la mortalité, toujours ayant égard à la population moyenne de la prison pendant ce laps de temps, de un sur 37,49.

Enfin pendant les deux dernières années (1836 et 1837) sous l'action complète de ce système dans toutes les catégories, les chiffres sont devenus pour la moyenne des journées de maladie 21,17 par année, et la mortalité est tombée à un sur vingt-quatre.

C'est comme si les prisonniers, au lieu d'entrer dans la prison à l'âge moyen de 30 ans, y eussent été admis pour chacune de ces époques successives à

l'âge de 42, de 53, et de 60 ans, en d'autres termes, c'est comme si ce régime pénal leur enlevait à 30 ans, suivant son degré d'austérité, douze, vingt-trois, ou trente ans de vie. (1)"

(1) Résultats calculés d'après les tables de Mallet.

CHAPTER VI.

Of the Clothing of Prisoners.

WE now proceed to show how this unfortunate class of persons is clothed. In a country like India, where the temperature generally is so high, this might be considered almost a matter of indifference, and yet though perhaps inferior in importance to some others, which we have discussed, it is of essential consequence to be attended to.

The Indian convict is allowed, what to him is tantamount to two suits of coarse cotton cloth, in the course of the year; but it is to be recollected, that the suit consists merely of a cloth about his loins, called a *dhotee*, and a loose scarf or *chuddur* thrown about his naked shoulders. He would appear likewise, in some jails to be allowed a piece of coarse grass mat, on which to sleep. I say, would appear to be allowed; for although I have been a great deal about jails, I cannot say, that I have observed the mat to be more than casually used. I conclude accordingly, that it is not found to add essentially to the comfort of the convict.

During the hot season, it were perhaps needlessly to complain, to say that the above clothing is not enough; but at other seasons, which may fairly be said to constitute two-thirds of the year, it certainly is not. During the rains, the convicts are frequently

drenched to the skin, once or oftener in the course of the day, and when they come to the jail to be locked up for the night, having generally no change of apparel, they are obliged to remain in their wet clothes, or to remain exposed, almost in a state of nudity, to the reduced temperature, which generally prevails at such times. During the cold season, or Indian winter, it is true, the convicts are allowed each one coarse blanket; and scanty as this provision is, and inadequate to the purpose contemplated, it is often not served out, until the season is too far advanced, to render it of any benefit or advantage.

Towards the termination of the rains, and the beginning of the cold weather, the jails are in the most sickly state; the days are still hot in the extreme, while the nights are raw and chilly. Fevers of the worst description prevail, and what is a great deal worse, the sequelæ of fevers, in the shape of intractable visceral disorders, and dysenteric affections of the most obstinate nature, both of which it will be readily admitted, require external warmth, as an essential part of their treatment. As the cold season more decidedly shows itself, pulmonary affections depending, on the sudden change of temperature, and the unprotected state of the convicts, very clearly develop themselves, and usually carry off several victims in each jail.

With such imperative necessity existing, we might at least expect, that the solitary blanket allowed the convict by Government, would be served out with regularity, and at the period, when it is most wanted;

and yet I regret to say, that this is far from being the case. As a contrast to such thoughtless and improvident conduct, it gives me great pleasure to record the following circular on this subject, which the Medical Board caused to be addressed to Superintending Surgeons of Divisions.

(No. 469.)

(CIRCULAR.)

To Superintending Surgeons of Divisions.

October 1st, 1833.

SIR,

The cold weather being now on the eve of commencing, I have been directed by the Medical Board to request, that you will immediately address the Medical Staff attached to Civil Stations, within your circle of superintendence, on the importance of seeing that the whole of the prisoners, in jails under their care, are duly supplied without delay, with the usual yearly blanket allowed by Government.

Thirty or forty spare ones ought at the same time, to be procured, for the exclusive use of such cases in hospital, as may require the protection to be derived from an additional covering of the sort.

The Board desire me to take this opportunity to suggest, *that the blankets and clothing of such persons, as may die in hospital of any of the infectious diseases, and particularly of hospital gangrenè, shall be invariably destroyed, without delay.*

I have the honor, &c. &c.

(Signed) JAS. HUTCHINSON,

Secy. Med. Board.

The replies of medical officers attached to civil stations, now submitted, will show how much the Board's humane interference was called for, and how much human suffering, their instructions, if properly attended to, are calculated to alleviate, if not prevent. But let us not deceive ourselves, the single blanket at present allowed is not adequate to the purpose in view. The prisoner ought to be furnished with one, on his admission into jail, and with another at the commencement of the cold weather, to be served out not later than the 1st of October of each year.

The plan suggested would, perhaps, occasion a little additional expense to Government; but, even this, I am inclined to think, might be avoided. At present, the convict receives one blanket in the year, to do with it, as he pleases; now many of these persons remain but for a short time in confinement, when they are liberated, carrying with them the blanket, with which they have been supplied; would it not be better then, to furnish every convict on his being committed to jail, with a Government blanket, duly stamped or marked, which should be mustered weekly, which he should neither have the right, nor the power to dispose of, and which should be returned into store, on his liberation.

A full stock of these blankets ought always to be kept up, so as to enable the jailer not only to supply the convicts occasionally, during the rainy season, with a dry one, but to furnish them permanently with an additional blanket, during the whole of the winter, at the expiration of which, or on the liberation of the

prisoner, it ought to be again returned into store. The necessity for this additional blanket might perhaps be obviated, and that too with advantage were every prisoner on the approach of winter to be furnished with a jacket of blanket stuff or a quilted mirzaec to come down over the hips, and with a worsted cap.

It does not appear to me, that there is occasion to enter farther on this branch of the subject at present. I may however recur to it again hereafter.

CHAPTER VII.

Of the prevention of Crime.

• WHEN we come to consider the vast expense incurred by the Government, in the maintainance of the various jails under the Bengal Government, that is, in the Straits of Malacca, Bengal Proper, and the North Western Provinces, a sum ranging from 20 to 22 lakhs of rupees* per annum; when we see upwards of fifty thousand of the inhabitants of these territories immured within the walls of prisons, and their labour and productive powers thereby lost to the country; when we call to mind the great trouble and expense, for loss of time is both loss of labour and expense, incurred in the conviction of these persons; and when we know, that in almost every instance, their families are thrown unprovided for, for the time, on the community; and when we reflect that these swarms of human beings are again successively let loose on society in a greatly deteriorated state as to character, we must admit that any suggestions, which would operate directly or indirectly towards the suppression of crime, must be of great public importance. Nor would a certain, if not a very considerable degree of amelioration in this respect appear either to be

* Prison Discipline Committee's Report, paras. 309, 312.

altogether utopian or hopeless; for the natives of India can neither be said, with justice, to be an intemperate or violent, or a blood-thirsty race; on the contrary, I am inclined to think, that on enquiry a large proportion of their crimes would be found to originate more from craft, than from violence. In temper they are easy, if not apathetic, and I should think eminently docile, where the prejudices of caste do not interfere.* Such being the case, it becomes our duty to enquire how crime is most effectually to be prevented, and how punishment, and as an important part of that, incarceration is most effectually to be turned to the public advantage, and to the improvement of the unhappy convict himself. The former would embrace almost the whole department of the legislator, and would consequently appear somewhat out of place in a work of this nature; there are however some points of so obvious a nature as to encour-

* The general morals of the people may possibly be bad enough, but an Indian criminal is probably a better man, than any other criminal of the same sort. His general character certainly differs less, from that of the mass of his countrymen, than would be the case in more civilized and moral countries. A large proportion of the crimes in this country are committed by persons, whose tribe have done the same, time out of mind, and they are almost as naturally the result of birth, as another man's honest trade. Many more are committed, as it were professionally, by the members of immense confederations, who are not much worse than other people, in matters unconnected with their profession. Owing to feelings and principles, which we can never comprehend, there is little or no consciousness of moral guilt amongst these classes, on account of the exercise of what they regard as their proper business.—
Vide Prison Discipline Committee's Report, para. 213.

age me to proceed to their consideration: Nothing perhaps in a country like India, where the inhabitants are somewhat inclined to take the law into their own hands, will tend more to the repression of crime, than the speedy and effectual administration of civil justice, and since the introduction of the present system of calling in the assistance of a sufficient number of Uncovenanted Assistants, in disposing of civil suits, much perhaps does not remain to be done in this respect. In criminal jurisprudence however much remains to be effected—our degraded Police requires to be reformed, and to be elevated into efficiency. The village Police, the basis or root of our present general system, and I am inclined to think the true one, must be re-modelled, and its rights, as well as its responsibilities clearly defined and provided for; to expect a body of watchmen, or a constabulary force adequately to perform their arduous duties, on an inadequate remuneration, or in many instances on no remuneration whatever, as at present—is manifestly absurd. I am aware that there are not wanting persons, who consider that a satisfactory Police cannot be constructed from the present materials, and who advocate in consequence the introduction of a superior or more military class of persons, from the Upper Provinces, for the performance of the duties in question; but has the experiment of improving, and adequately remunerating the present class of Policemen ever been attempted, and failed. To me it appears that no race of foreigners, which Up-country men in the Province of Bengal must

be considered to be, can ever be so cognizant of the manners, and customs of the natives of the province, or so well acquainted with the characters and interests of their neighbours, as suitable persons selected for the duties, from among the people themselves.

The class of public functionaries, I mean the Darogahs, who preside at present over the police of villages and parishes, are besides notoriously corrupt, and inefficient, and until this class is put upon a proper footing, all attempts at an effectual reform of the police must prove abortive—nor is it the fault of these functionaries themselves, for while duties of the most important and arduous nature are exacted from them, and while they are momentarily, from the nature of their situations, and the manners and customs of the people exposed to the temptations of bribery and corruption, they are expected to perform their duties, on salaries inadequate even to the maintenance of a palanquin, and saddle horse; means of conveyance, which may be considered absolutely indispensable to their offices. The result may be foreseen.* They are notoriously and necessarily corrupt, and are in consequence so frequently changed, either from these causes, from unfitness, or from the caprice of the magistrates, that the general object amongst them would appear to be, to make as much as they can, before they are detected. When this last consummation is effected, the change is generally far from the better—a new race still more hungry and unprovided for, is only let loose to prey like the

former¹ on the hapless inhabitants—no change of importance for the better can be expected, until this class of public officers is put on a proper footing, and adequately remunerated, and this can only be done by raising their present miserable salaries of 25 Rupees per mensem to 150 Rupees, *at least*, with the prospect of a farther increase of 100 Rupees per mensem, after a satisfactory service for a given number of years, or for important services rendered.*

To facilitate and expedite the criminal administration is perhaps still more necessary; for while the principals are exposed to all the evils of bribery and extortion as at present, and while witnesses are exposed to all the hardships of delay, and procrastination at the zillah courts, it is in vain to expect, that crime will be brought to public notice, or that efficient assistance will be given for the detection of the criminal—nor is the evil of crowds of persons so circumstanced being brought from a distance without the means of subsistence, while their families at home are left equally destitute, unworthy of consideration. The Government seem to be aware, that some change in the system is called for, and it is understood that they have it in contemplation to employ Uncovenanted Assistant Superintendents of Police, whose duty it shall be to apprehend delinquents, and commit them for trial before the magistrate. With every wish to give the

* Vide Prison Discipline Committee's Report, para. 311.

Government full credit for good intentions, I cannot say, that I can give my unmixed approbation to the measure. In the country districts, such refinement in the dispensation of justice,* in the present state of society, is in my opinion uncalled for, and the delay occasioned by the case having to be considered by two different functionaries, viz. by the Superintendent of Police, before committing the parties, and by the Magistrate in trying them, cannot be advantageous. To me it appears that the additional expense, which would thus be incurred, would be infinitely better disbursed, in placing the Darogahs of Police, on the efficient footing already suggested in this paper. Persons might then be induced to apply for, and might be appointed to these situations without reference to religious persuasion; at present Christians are virtually excluded; while means might be taken to have offences of a minor nature, when referred by the Magistrate, tried by the various Sudder Amceens or other civil officers stationed in the different Purgunnahs of districts.*

To me it appears, that considerable advantage might be derived from constituting the present Civil and Session Judges, Chiefs or Commissioners of districts, so far modifying their functions, as to give

* As the uncovenanted service would thus be considerably extended, it might be organized like the covenanted, and certain rules laid down for the promotion of its members, according to their qualifications and services.

them a general power of superintendence over the other civil functionaries, and making them the channels of communication with the general Courts, and other higher authorities. The present Commissioners of Revenue would thus be absorbed or incorporated.

Another most important measure tending to the suppression of crime, I feel convinced would be the remodelling, I am almost inclined to say, the total abolition of the present system of licensing shops for the selling of spirits. European statesmen would of course consider such a proposition chimerical, and so doubtless it would be in Europe; but in Bengal and the North Western Provinces, I believe the evil might be suppressed, almost by the stroke of a Secretary's pen. The natives of India generally are not addicted to intoxication, and when they are, they generally have recourse to ganjah, opium, or some other narcotic drug, which they use in their hookahs, for that purpose. The effects of these would appear to be less pernicious in exciting to crime, and more transitory in their effects than spirits; be that as it may, it must have struck every one, who has ever been employed in the administration of justice, how comparatively frequent crime is, at, and in the vicinity of shops established for the vending of spirits. I know not what revenue may accrue to Government from this source; but I can scarcely think, that it can be more than sufficient to pay the different functionaries connected with the Department, and to maintain the additional number of

criminals, who are thus consigned from the 'immoral habits, which it induces, to be the inmates of our jails.

Such are a few of the measures of a general nature, which seem to be more immediately called for, in the civil and criminal administration of the country, with a view to the suppression of crime; it now remains to be considered, how much is to be effected, by the treatment of the criminal, and this leads me to the consideration of the theory of punishment.

CHAPTER VIII.

Of the Theory of Punishment.

IN a brief and compendious work of this nature, it would almost be out of place to enter on the abstruse consideration of the objects of punishment. Formerly we are aware, that it was considered as a satisfaction or atonement for an offence; and that revenge came in consequence to be considered a wild kind of justice. The views of the modern society on this subject are fortunately more philosophical, and the offence and punishment are both considered evils, and that penal system consequently the best, which most effectually represses crime, at the smallest expense of pain, and punishment inflicted. Excessive severity, to say nothing of the injustice of it, has been found destructive of the sense of criminality, and indignation towards the offender, and of the desire to see punishment inflicted, and consequently to lead to his entire impunity.

Punishment to be most efficacious should only be had recourse to, when absolutely necessary, should be the least possible, should be proportioned to the crime, and determined by the laws; while these should be clearly expressed, and generally made known.

The legitimate tendency of all punishment ought to be, to destroy in the minds of those subject to the laws, the desire to offend against them, whether this

is to be effected by exhibiting the superior advantages which result from conforming to them, or the miserable effects which result from an opposite line of conduct. This is perhaps a wider view, than has been generally taken of the subject, for while some have considered the reformation of the offender as the only legitimate object of punishment, and thus totally omitted all thought of those, who might otherwise offend, others have confined it to the deterring from crime, leaving out of consideration altogether the opening of the mind to the superior advantages resulting from habits of sobriety and industry, and a life spent in conformity to the laws. The object of punishment ought to be twofold, 1st, to inculcate a dread of the consequences of vice, and 2d, to instil a love and respect for virtue. To confine it solely to the deterring from the commission of crime is taking too narrow, and humiliating a view of the question.

As the means of effecting the first object, with the criminal, may be said to pave the way for the second, we shall first consider it.

To deter by the force of example has been the usual expression, and yet though I am not prepared to say, that we could do without example, certain it is, that the proposition is not strictly correct. Example does not deter; on the contrary the most sanguinary laws have ever produced the most criminal population, and the exposing of criminals to the public gaze has been found, from its debasing effects on the minds of the multitude, to be in a moral point of view highly prejudicial to the best interests of society.

But it¹ may be asked how are the multitude to be deterred from the commission of crime, unless by the force of example; the force of this objection must be to a certain extent admitted, but it is at the same time to be recollected, that we probably have not an under-rated idea of the horrors of the dungeons of the Inquisition, or of the prisons of Venice, although we never saw criminals undergoing their punishments in either. No! to the imagination we must trust in this, as in many other instances, and with a pretty confident assurance, that it will fill up for itself the gloomy picture, and in the result, do us no injustice. I question very much, if acting on this principle would not be found powerfully to contribute to the repression of crime, and if, by carefully concealing both it, and the offender from the public eye, its commission would not appear less common, and consequently more monstrous to the mind. . . .

Be that as it may, the talented author of *Don Juan* would appear to have entertained sentiments not dissimilar, when speaking of the secrets of the harem, and the mode of punishment in use, he says "no daily scandals made the Press a curse, morals were better, and the fish no worse." In short to familiarise men with crime is destructive, and to make them believe, that no others commit crime, is the true art of preserving them from it.*

* Besides a train of disorders directly caused by the bad administration of the law of public exposure, crimes increased to a fearful extent, which being, necessarily, for the most part committed by persons, who

Some authors have dwelt at great length or rather placed great importance on punishment being immediate and certain ; but even in the accuracy of these apparently incontrovertible positions, I question if they have not greatly erred. If indeed they have lapsed into this error, it has probably arisen from their giving people credit for being guided solely by their reasoning powers, and not at all by those of the imagination, forgetful of the truth of the latin adage — “ Omne ignotum pro magnifico,” or paraphrased, that we are apt to magnify every thing, which is concealed or unknown.

The real object of punishment has, in my opinion, *pro tanto*, been more beautifully and correctly expressed by Cicero, than by any other author, ancient or modern, when he says “ ut metus ad omnes, pœna ad paucos perveniret.” It is indeed the metus or dread, and not the pœna or punishment, which is efficacious, and the long, tedious, anxious, and uncertain hunt of the English law after an offender, though oft rated, and abused, is probably far from being without its uses ; at least of this I am sure, that if the culprit has

had never been exposed, must be attributable rather to the effect of exposure on others, than on the persons exposed. In the year 1790, four years after its commencement, this shocking practice was abolished, and the effect was astonishing ; for at the end of another period of four years, that is to say in 1794, the population having in the meanwhile increased at the rate of four and a half per cent. per annum, and the penal law in other respects having remained unaltered, crimes had decreased by two thirds.—Vide Prison Discipline Committee's Report, para. 191.

been once detected, and ignominiously punished, we may consider that we have done with him, and that we have in reality no farther hold of him, the worst that could happen, having in general terms befallen him—as an example of this; a soldier is doubtless deterred from, the commission of crime, by the dread of shame, consequent on exposure; but let the same individual receive 500 lashes for some offence, and will any one be bold enough to say, that he will hereafter lead a virtuous or regular life, through the mere dread of similar physical suffering; or on the contrary do we not know, that having been deprived of his sense of shame, it is ten to one, that he will be rendered ever after totally useless, either as a soldier or as a member of society. For this reason I would be inclined to look favorably, under all suitable circumstances on transportation, as a mode of punishment, but more especially as holding out a prospect of the criminal's eventual restoration to society, and as a profitable member of it. This will probably best be effected, by apprenticing him out after a brief, but satisfactory period of probationary punishment, to some of the Colonists, for a certain number of years, until he can find a position for himself in the new society, in which he has been placed, and thus escape being cast helpless and destitute, on the world, again to commence a career of vice, and it might be of crime. The history of our Penal Colonies would no doubt furnish many instances of individuals, so circumstanced, having risen to a certain degree of affluence and respectability, and conse-

quently of the correctness of the views here advocated. If transportation is to be looked on merely as a means of punishment, the absurdity must at once strike every one of sending men away from the place, where their crimes have been committed, to expiate them, where the example can be of no benefit.

Of the punishment of death I shall merely say, that it is disgusting, debasing, and uncalled-for, and consequently that it ought to be abolished; the most sanguinary laws have ever produced the most criminal population, and the contempt and indignation, entertained towards the executioner, sufficiently evince the execration, in which the punishment is held by the public. In short the law becomes odious, and pity for the offender takes the place of that of respect, which ought to be entertained for it. But it is now time, that we should proceed to offer a few observations on the second head of our subject, viz. the reformation of the culprit.

This of course, from the comparatively limited number, and less worth of those whom it affects, is not of the same general or stupendous interest as the former, it is still however highly important, and is besides more particularly german to the present undertaking.

From innocence to guilt there is but a step, and from guilt to innocence there may perhaps be but another, and we must take care, that we do not interfere, and render that step all but an impassible gulf. At present it may be doubted, if any culprit were ever reformed in an Indian jail, although doubtless

a few may have been deterred, from a repetition of crime, through a dread of punishment, and to me it appears problematical, if much will be effected in this manner, until our system of jail management is very much improved. This I think can only be expected under the surveillance of humane and intelligent Superintendents of Jails of European extraction, and probably I may add of Christian principles. These officers of course must be suitably rewarded; under the present class of ill-paid Native Jail Darogahs, all improvement to any extent must be despaired of.* In the treatment of the convicts it must likewise be borne in mind, that while they are made to undergo the penalties awarded for their offences by the law, they are men, endowed with all the feelings and prejudices of such, and perfectly alive to feelings of gratitude for considerate conduct, and of anger, indignation and revenge at cruelty or offence wantonly inflicted on them. The following passage, from the work of De Beaumont and De Toqueville on the prisons of America, seems equally true and appropriate. "In locking up the criminals, nobody thinks of rendering them better, but only of taming them, until they are put in chains like ferocious beasts, and instead of being corrected are rendered brutal," of course they are; are lunatics rendered less ferocious by cruelty and coercion, or are dogs rendered less savage, by being chained up?

Acting on these principles, convicts should be properly classified, as much as possible according the description or heinous nature of the offence, of which they have been convicted, and to every jail should be attached penitentiary wards, in which juvenile and other offenders, not of a hardened character, should undergo their punishments. To every jail there ought likewise to be attached a range of solitary cells; in which offenders might be confined in darkness, and in silence; not that I would for a moment recommend this punishment to be had recourse to, for lengthened periods, but merely as a means, by some period under a week, of punishing juvenile offenders, or those guilty of breaches of Jail Discipline.* The adoption of this

* For the effects of solitary confinement on the health of the convict see Dr. Coindet's work on the prisons of Geneva, and likewise the following extracts from Dr. Malcolmson's (late Secretary to the Madras Medical Board,) letter to the address of Sir Henry Hardinge, K. C. B., then Secretary at War:—

“Many men, particularly those of indolent habits, endure a confinement of four or six weeks, on bread and water, without injury to their health; but, in some instances, a shorter period is sufficient to cause a total loss of appetite,—the bread is hardly touched, and on other food being allowed, the patient is unable to eat or to digest it. The stomach becomes weak; there is uneasiness across the region of the stomach, spleen, and liver; the latter is torpid; the bowels are confined, or they are relaxed with slimy discharges unaccompanied with pain, yet the swollen red tongue indicates the existence of irritation of the mucous membrane of the digestive canal. The pulse is quick and feeble; and the clammy skin, vertigo, debility, headach, and sleeplessness, show how much the constitution suffers from diminished nervous power. The convalescence is slow, and the treatment requires to

mode of punishment for long periods is well known to be destructive to the health, of those subjected to it

be adapted to the enfeebled state of the system. The effect is, however, more clearly seen in men sentenced to six or twelve months solitary confinement. Two of these were in hospital at the same time, with decided symptoms of scurvy :—one was admitted after five months confinement, during part of which he had been allowed extra diet at my recommendation. It was observed, that for some time previous to his removal to hospital, his daily allowance of bread was removed almost untouched. He complained of pains of the limbs, along the spine, and across the loins ; tenderness of the shin bones ; hardness, pain and a feeling of stiffness of the calves of the legs, and the skin over the painful muscles was of a dark livid colour from effused blood. The gums were spongy, livid, and retracted, and he suffered from sleeplessness, some pain of the region of the liver, and slight griping. The tongue was yellow and its edges red. The other had been a shorter time in confinement, and complained of debility, disorder of the bowels, pains of the shin bones, &c. &c. A blister was applied, which caused a foul sore, from which dark coloured blood flowed on the slightest touch. My friend Mr. James Shaw having furnished me with a report on the health of these men, two years after I left the regiment, I am enabled to state, that the one had hardly been out of hospital during that time, and had not then completed his full period of confinement ; and that the other, was very frequently on the sick list with a variety of complaints. Indeed, very few men are able to undergo a long period of solitary confinement on bread and water, without being much in hospital during the period of sentence ; and many continue to suffer from the various diseases, to which men of exhausted constitutions are so liable in warm climates. It may not be improper to add, that I have observed the minds also, of prisoners confined for long periods, more especially, when on a diet they believe to be destructive to their health, to become gloomy, or even furious, and disposed to commit every crime ; a fact which was forcibly stated many years ago, in the House of Commons by Sir Robert Peel, in reference to the substitution of solitary confinement for other punishments in that country.

both mental, and bodily.* I consider it almost superfluous to add, that every person should be considered guiltless, until proved otherwise, and consequently that all persons, merely confined in the house of custody, should be treated in every respect well, and paid

When the solitary confinement is long continued, the severity of the punishment is increased in a much greater proportion, than the length of time, and any addition in the shape of restricted diet, which may be necessary in short confinements, is quite uncalled for: the long seclusion, without employment is itself sufficient.

* * * * *

Dr. Bostock, observes, that the stomach can be excited to the due performance of its functions, only by supplying it with an appropriate stimulus, and that by the long and uninterrupted continuance of one and the same alimentary substance, that substance loses its stimulating power, and thus the stomach becomes incapable of digesting it.

* * * * *

Many observant practitioners have, of late years, been impressed with a conviction, that a cachectic taint of the constitution is easily induced in hot climates, which greatly aggravates the diseases so prevalent in those countries. Want of exercise, and the depressing passions, are amongst the most frequent causes of this state of the system, which becomes itself a very formidable disease, though often escaping detection, till too late to be remedied by art.

* * * * *

“The stomach by long fasting, has its digestive powers much weakened, by which the secretion of bile is diminished, and a diseased structure of the organ is induced.”—“When from long illness or other causes weakness is produced, with a languid circulation, chronic liver disease is almost a certain consequence.”

* Vide Prison Discipline Committee's Report, para. 201—Coindet on the Jails of Geneva, and Dickens' and Miss Martineau's works on America.

for their labor, should they labour, and subsequently be found innocent. They might likewise have a liberal money subsistence allowance, instead of cooked rations, should they desire it, and such a measure be practically convenient. Where the offences, of which they are accused, are of a very aggravated nature, of course adequate precautions should be taken, that they do not make their escape.

It has been already shewn, that the exposure of the convict to the public gaze is destructive to his sense of shame, and likewise to the healthful feeling of the public; this accordingly ought in every instance to be avoided. There is no doubt, that corporal punishment is highly objectionable on this account, and from the indelible marks, which it is apt to leave on the person, but in India we have but a choice of evils, from the vast population and number of offenders, and until some improved system of Prison Discipline be introduced, it is better perhaps that it should be continued, than that our jails should be overcrowded, and their inmates decimated by disease.* Nothing but this could justify the measure,

It is however certain, that the present system is attended with very serious evil consequences, and that *sufficient food and exercise must be allowed to the prisoner, if it be intended, that he should afterwards be of use to himself, his family, or country.*"

* Under this impression, the Medical Board were induced in their Despatch, No. 18, of 1843, dated the 31st March 1843, to recommend the resumption of corporal punishment, which had been previously abolished by Lord William Bentinck; the expediency of the measure was acknowledged, and the suggestion carried into effect accordingly.

and it would be well, that it should not be had recourse to, but for crimes of great turpitude, and that care should be taken not to mark, and ever after degrade first offenders, in this manner, where it possibly can be avoided.

Guided by the principle of avoiding exposure the prisoners should be worked, and taught trades and handicrafts, within the limits of the jail. The skill and habits of industry acquired, can neither injure society, nor the individual, and it would be absurd to suppose for a moment, that any one would voluntarily adopt such a mode of learning a trade or handicraft.*

But if prisoners are to be thus confined, it will become necessary, that some mode should be adopted for giving them exercise, and the treadmill, for a few hours a day, would appear well suited for this purpose, particularly in regard to exercising the lower limbs. The grinding of wheat, or some similar employment

* "It is remarkable that the only material reforms in prisons, which the efforts of those Americans, who have this subject at heart, have as yet, or had till the other day, been able to induce the several legislatures to effect, relate to prisoners out of whom money can be made. No more than a thousand or twelve hundred men go annually into the state-prisons; these are all sentenced to hard labor for long terms, they can be taught profitable handicrafts, and they stay long enough to repay the cost of instruction, and to give a profit besides. Accordingly we find, that many state-prisons have been reformed to such an extent as to be fit to be taken for models." And yet the Committee are against the teaching of handicrafts. The particular in-door employments, which would appear most suitable for the Indian convict will be found, under the head of the working of prisoners.—Vide Prison Discipline Committee's Report, para. 316.

would probably have a similar effect, in regard to the upper. As a constant mode of employment, especially if the greatest care is not taken in classifying the prisoners, according to their physical power, I rather think that the treadmill has been found, by experience, to be objectionable.

It only now remains to recommend, that Evening and Sunday Schools should be established in jails under suitable native teachers,* and that the Superintendents of Jails, or any Clergyman or Missionary at the Station should be encouraged to distribute religious tracts among such of the prisoners, as may be found willing to receive them, but of course in no wise to attempt force, or, use any other undue means for that purpose, and finally that divine service should be eventually introduced, should there be encouragement. He must indeed be fond of learning, who would voluntarily seek to obtain

* On this subject the Prison Discipline Committee remark—"Several officers have recommended the education of prisoners, that is to say, the instructing them in reading, writing and cyphering. Such a system would involve a very heavy expense, and we must say, that there are no other 56,000 men in India, whom we do not think more deserving of education, at the public charge, than the 56,000 criminals in gaol.

• That any part of that very small sum, which the State has hitherto been able to expend upon the instruction of the people should be consumed in teaching the worst class of people in the community, the class who would be least likely to turn their instruction to good account, and the class who least deserve public favor, is a proposition which we cannot approve"—as well might the Committee deny them physic or a Physician. Being no longer their own masters, we are of course responsible for them, and not they for themselves.—Para. 271.

it, through the medium of a jail. I understand, that the system of teaching trades and handicrafts has been, or is about to be introduced into some of the prisons of England, and it gives me pleasure to add, that the Government of the Cape of Good Hope has likewise adopted the same principle, as well as that of giving moral, and religious instruction to their convicts, and I have little doubt, that India will speedily take up the position in this branch of legislation, which she ought to hold, not only from her vast general and penal population, but from the high intelligence of her functionaries.

CHAPTER IX.

*Of Jail Hospitals, and some of the Principal Diseases,
which infest them.*

It now remains for me to offer a few general observations on the subject of jail hospitals, and on the principal diseases, which infest them, or may be considered in any respect peculiar to them.

The hospital ought generally to be situated outside the jail, and every precaution adopted to secure not only ample accommodation for the number, it is intended to contain; but a full and free circulation of air within its wards. With this object in view, the surrounding wall ought to be built somewhat lower, than that around the jail, or the hospital itself ought to be better raised, which will answer the same purpose. I question, if in many instances it might not, with great advantage, be erected as a second, or upper floor, to a store room, or even over one of the common wards of the jail.

The observations, which have already been made in regard to jails, apply with still greater force to jail hospitals. They ought to be furnished with boarded cots and detached privies, for use at night, and half the door-ways should be fitted with pannelled or venetian doors, and half the hospital at least, with glass windows in addition. All jail hospitals ought likewise to be so built, as to be able to command

the segregation of one or more of its inmates, should that measure be deemed necessary, either on account of extreme weakness, an infectious disorder, or the contingency of a capital operation. Jail hospitals ought invariably to be lighted at night, and one of the native doctors ought to be made to sleep in the hospital; or, at any rate, within the hospital compound or enclosure, so as to be at hand at all hours.

Every jail hospital ought, likewise to be furnished with a warm bath, as being a most important auxiliary in the treatment of some of the diseases, to which prisoners are subject. I may add, before quitting this part of the subject, that at many bleak and exposed stations, not only in Hindoosthan, but in Bengal, the prisoners have been allowed the use of fires, during the extreme severity of winter, with great apparent advantage.

The Surgeons in charge of jails, for many reasons, ought to be made to report as fully, and to keep up the same Hospital Records, as the Surgeons of Native Corps;* they ought likewise daily to inspect the provisions served out, or brought for sale, both to those in hospital, and to those in jail; and they ought to muster and inspect the whole of the prisoners every Sunday morning, ascertaining, at the same time, that they have not made away with any portion of their clothing, more particularly the blanket allowed by Government. Prisoners are often averse to enter hospital, and there is no doubt, that by such inspec-

* This has since been done.

tions, many a case of disease might be detected, before it has become hopeless and irremediable.

No gang of prisoners ought ever to be detached without being adequately provided with medical assistance.* With the same object in view, the key of the jail wards ought always to be kept at hand, so that a prisoner may be removed from the jail to the hospital, at a moment's warning, day or night, should he require it. By adequate attention to this point, there is no doubt, that many a case of cholera might be saved, that would otherwise be sacrificed to neglect and apathy.

It would be superfluous to repeat here, what I have said elsewhere on the subject of fetters, and the ulcers resulting from them; I shall accordingly merely add, that when such cases present themselves for treatment, the fetters ought immediately to be struck off, as a measure of humanity and precaution, which, as far as my experience goes, is now generally, if not universally practised.

This report has already extended to a length, which I confess, I did not at first contemplate, and it is now necessary to hurry to a conclusion, as rapidly as possible.

Every different disease, which affects the human body, it will readily be believed, is to be found at times among the inmates of jails; those however,

* This contingency has been provided for by Government, since the above passage was written, at the suggestion of Colonel Galloway, late of the Military Board, supported by the Medical Board.

which may be said to infest the jails of India, are fevers, dysentery, and scurvy, cholera asphyxia, and hospital gangrene. Regarding the treatment of the two first, I have little to add to what may be found, in my account of the fevers and alvine fluxes of the natives, published in the 5th vol. of the Transactions of the Medical and Physical Society of Calcutta. The line of practice therein laid down, I am inclined to think, on the whole, better adapted to the treatment of these affections, in the native constitution, than any other yet pointed out. I am far, however, from considering the production, to which I allude, by any means perfect, either in regard to its style of composition, or to the matter which it contains. The former, it were idle in me to enquire into, or to criticise; the latter however demands the most serious consideration, that I can bestow on it.

I am inclined to think, that had I insisted more on vascular depletion, particularly on local bleeding by leeches, in the commencement of the dysenteries of the natives, where the patient is at all youthful or robust, and on the occasional use of the warm bath, that the essay in question would have been more useful, and worthy of attention. These remedies however to be useful, must be had recourse to, in the earliest stages. The efficacy of blistering too, if had recourse to, before the disease is too far advanced; and the relief which frequently, if not generally, follows the exhibition of a powerful opiate enema, particularly after the operation of a laxative, were perhaps not sufficiently dwelt on in the essay, in question.

At the time of writing it, I was likewise not aware, that sulphur is often employed with advantage as a laxative in dysentery, and that it may be administered with an additional prospect of relief, if combined with small quantities of the extractum hyosciami; it is but fair however to say, that my experience of this remedy has been very limited.

In chronic or subacute cases, especially when they occur in persons advanced in years, I am inclined to think, that minute doses of sulphate of copper, in combination with opium, are worthy of a trial, particularly where the ejections are feculent and frothy; but I would not recommend this remedy to be hazarded, where the evacuations are tinged with blood, or where considerable signs of intestinal irritation exist.

The observations of Mr. Assistant Surgeon Raleigh on the exhibition of sulphate of copper, in dysentery, to be found in the 7th volume of the Transactions of the Medical and Physical Society of Calcutta, contain much valuable information on this subject.*

* Since the publication of the first edition of his work, the pernitrate of iron has been recommended, as a remedy in chronic diarrhoea and dysentery by Mr. Kerr of Paisley,* and more recently the Ioduret of Iron, by Mr. Assistant Surgeon G. C. Rankin, of the Presidency General Hospital. Mr. R. generally uses this preparation in combination with morphia, in the proportion of three of the former, to half a grain, or a grain, of the latter, given three times a day. Both he and his colleague Mr. Assistant Surgeon John Jackson speak of this medicine, as a most valuable addition to our list of remedies in chronic dysentery and diarrhoea, particularly in such cases as have recently come from China.

* Vide the late Mr. Twining's invaluable work on the diseases of Bengal, vol. 1st, page 217.

Finally, in my communication on the alvine fluxes of the natives, I have mentioned calomel as the only mercurial, which I was in the habit of using in such cases, at least such a conclusion might be drawn from no other having been alluded to: this impression however, would be erroneous, as I was in the habit occasionally of substituting the blue pill; and although many prefer the latter preparation, I confess, that in my hands, it was not generally so beneficial as very minute doses of calomel, in combination with the other remedies.

The communication thus commented on, will be found in a subsequent part of this volume, to which the reader is accordingly referred.

Land scurvy is not an unfrequent disease in jail hospitals, and probably assumes many forms; when it appears under its idiopathic or more immediately characteristic type, it requires for its treatment free exercise, and generous diet, with an allowance of wine or fermented liquors.

Lime juice alone, or mixed with wine, the bitter tonics with the mineral acids, quinine and chalybeates will probably be the most appropriate remedies; but above all change of air, and when conveniently practicable this ought to be had recourse to, and the more speedily the better.

A separate paper on this affection will be found in a subsequent part of this publication.

On the subject of cholera asphyxia, as it prevails among the natives of India, I have likewise communicated my views to the public in a distinct work.

Since its publication I have seen no reason materially to alter the sentiments therein expressed. Dr. Brown of Sunderland, in his account of the disease, in the *Cyclopædia of Practical Medicine*, has given it as his opinion that "within the district which it occupies, it possesses a contagious property; or in other words, those individuals, who have intercourse with the sick, especially in a locally impure atmosphere, are attacked in a greater proportion than the other members of the community:" and more lately Dr. Alison, in the same work, in his *History of Medicine*, declares, "that he has no difficulty in expressing his own conviction, that the disease has a contagious property."

It is not my own opinion, that cholera in India is of a highly contagious nature, or that those exposed to its influence will be invariably, or even generally, affected by it; but I conceive, that under circumstances favorable to its propagation, it is capable of becoming contagious even in India, and that too on some occasions, such as on board ship, to a frightful extent. The history of the introduction of the disease into America from Great Britain, and the frequent occurrence of cholera in vessels leaving India, but never on their way to that country, until they have communicated with the shore, go far to prove, that it is so.

The views which I maintained in regard to the proximate cause of the disease, the discoveries of Dr. Stevens, and the general advance of medical science, have tended greatly to confirm, if not, to prove.

With regard to the plan of treatment which I proposed, I am desirous of offering a few observations.

The concurrent voice of medical men in India seems now to have pronounced blood-letting, to be a doubtful remedy, in the cholera of the natives of the country; not that it is not eminently useful in some cases; but on the other hand, in others it appears to be hurtful, or at least not beneficial. In short, the precise states, in which it is likely to be had recourse to with advantage, are unknown; it is generally supposed, however, that cases in which collapse has made any considerable progress, in which the disease has been of considerable standing comparatively, and in which the evacuations have already been profuse, are least suited for the adoption of the practice.

A general opinion likewise seems to exist, that cholera, like fever, varies in its type or character, at different times, or epidemic visitations; and whether this be true or not, a belief in it, would seem to lead to the safest line of practice in regard to the adoption of blood-letting, or the extent to which it ought to be carried, as a remedy in the disease.

Tartar emetic, since the period I wrote, has had a tolerably fair trial, as a remedy in cholera. It has been pretty extensively used in England, and apparently with some little advantage; in India too, it has not passed altogether unnoticed. I am in possession of cases, both in which it has been used with success,

and in which it has failed to be of any marked benefit. On the whole, from what has come under my observation, I am inclined to think, that though deserving of farther trial, the remedy is not likely to supersede the more generally established mode of treating the disease; perhaps, that it does not deserve to do so.

- The general opinion seems to be, that it is unsuited to cases, in which collapse has made much advance; but the fact is, that farther experience of the remedy is required, before it can be spoken of, either with certainty or precision.

- Formerly I spoke somewhat disparagingly of blistering the epigastrium in this disease. At that time, the common blistering plaister was in use, and from its comparative inertness, general inadequacy as an epispastic in this disease, and from the misery which it occasioned to cholera patients, in a ceaseless state of jactitation, its application seemed generally to be productive of more harm than good. The case however is now altered: the liquor lyttæ is so speedy and efficacious in its action, and occasions so little pain or annoyance to the patient, that I have little hesitation in saying, that blistering the region of the stomach by means of it, if early had recourse to, will be found a valuable addition to our curative means.

With respect to stimulants, after the first onset of the disease, I expressed a preference for those which do not possess a narcotic power. In this my sentiments have undergone no change; the stimulant preparations of ammonia are perhaps the best suited to

our purpose, and we shall probably do well, neither too long to defer their use, nor too sparingly to exhibit them. With these premonitory remarks I beg to refer to the paper on the treatment of cholera to be found in a subsequent part of this volume.

On the measures of a preventive nature, which ought to be adopted in cholera, as well as for the general line of practice, which ought to be pursued in the management of hospital gangrene, I beg to refer to the subjoined copy of correspondence, which passed between the Medical Board and Mr. Assistant Surgeon Cheek, then in medical charge of the civil station of Bancoorah.

(No. 943.)

To G. N. Cheek, Esq., Asst. Surg., Bancoorah.

Fort William, Medical Board Office, Jan. 7th, 1833.

SIR,

Copies of documents connected with the present sickly state of the prisoners in the jail at Bancoorah having been submitted to the Medical Board by Government, with a view to the Board's adopting such measures as might appear to them best calculated to check the sickness, and alleviate the distresses of the unfortunate sufferers, I have been directed by the Board to offer the following observations for your consideration :

It appears, from the documents above alluded to, that the prisoners principally suffer, from cholera morbus and hospital gangrene having broken out amongst them.

With regard to the first, it appears to the Board unnecessary to offer any observations relative to the particular line of treatment to be adopted, the disease having now existed so long in the countries subject to our sway in the East, and being of so frequent occurrence, that every medical officer of any standing must be familiar with almost every different mode of treatment, which has been proposed for its cure.

The Board however beg to observe, that the general precautionary or preventive measures, which they will take occasion to recommend, with the view to the eradication of the hospitable gangrene, they consider far from inapplicable, in regard to the cholera morbus.

There is nothing more essential to animal life, under every circumstance, than a due and adequate supply of atmospheric air, and whenever human beings are unduly crowded together, disease, in some form, seldom fails to manifest itself. Under this impression, the Board conceive it of essential importance, that neither the jail nor the hospital should be overcrowded at any time; but at present, when an infectious disorder has actually broken out, particular attention to this object is imperatively demanded:

The jail, and more especially the hospital ought immediately to be vacated, and exchanged for tents pitched in a high, open, and dry situation, at a distance from the banks of rivers, wheels, morasses, and every other source of miasmal exhalations. Adequate provision should, at the same time, be made, that the prisoners shall have a greater space, allotted to them,

particularly the sick, than under other circumstances would be deemed necessary, and that the cases of ulcers shall be separated from the rest, the instant that gangrenous action has been observed to commence.

The prisoners, at the same time, and more particularly the sick, ought to be supplied with food of the most unexceptionable quality, and they ought to be directed to cook a meal early in the morning, before quitting the encampment, for the labour of the day. They should likewise be supplied with comfortable clothing, and while in tents, with well-dried, clean straw, on which to sleep. Care should be taken, at the same time, that the camp is well supplied with wholesome, pure water, of unexceptionable quality.

During the prevalence of extreme degrees of sickness, the prisoners ought to be lightly worked: they ought to be allowed leisure, as well as the pecuniary means, to enable them to cook a meal morning and evening; and care ought to be taken, that they be prevented from eating rice or gram, parched or raw, during the intervening intervals. Men who have been accustomed to the habitual use of opium, or any other narcotic, ought not to be entirely deprived of it, particularly if their healths should appear to suffer from the want of it.

To the rude inhabitant of the mountainous and jungly districts, captivity in the plains has too frequently proved fatal, a termination which no course the Board are aware of, is so likely to avert, as establishing a small subsidiary jail for people of the sort,

in a climate in some measure similar to that, to which they have been accustomed.

The jail having been relinquished in favor of tents, the Board would recommend you to lose no time in having the whole of it, but particularly the hospital, carefully fumigated, either with the chlorine, the nitrous, or the muriatic acid gases, the drains cleaned, and together with the wards and the hospital of the jail thoroughly purified by aspersions with solutions of the chlorides. The doors and windows ought then to be washed, and the walls in the interior of the buildings white-washed, the wells and tanks in, and around the jail being at the same time cleared out, and put into a thorough state of repair.

With respect to the treatment of hospital gangrene, it is more difficult to lay down specific directions, particularly in the absence of any information regarding the peculiar features of that, which prevails in the jail at Bandoorah. The difficulty is farther increased, by the circumstance of different remedies having been more or less successful in different hands; notwithstanding, the Board beg to offer a few observations on its treatment, for your consideration.

The treatment naturally divides itself into general and local. The circumstances of perhaps the greatest importance, with the view to the first have already been pointed out, viz. adequate space and accommodation for the sick.

The complaint is very generally attended with febrile irritation of a low or sub-acute character, and this, no doubt requires to be attended to. In

the robust, venesection has in some instances been practised with advantage, but would not appear to be much calculated for the class of patients now under consideration. Gentle action on the digestive organs, by means of a mercurial, or acting mildly on the skin, and alimentary canal, at the same time, by means of tartar emetic, with a view to subduing febrile irritation, might perhaps be more advisable. Anodynes are at the same time indicated to soothe pain; and might be added to the above, or the desired effect might be sought for at once, by the administration of a preparation like Dover's powder, alone, or in combination with a mercurial.

It is not impossible, that quinine might be administered, at the same time, with one of these remedies, with a greater prospect of success, than if exhibited in its simple and uncombined form.*

It now remains to mention a few of the local applications; which have been found most useful in the treatment of this complaint; these are the application of the undiluted nitric acid, the nitrate of silver, the liquor arsenicalis, the compound tincture of benzoin, the balsam of tolu, fermenting, carrot, and charcoal poultices, camphorated spirituous fomentations, warm

* In my experience of this disease, which has been extensive, I find that the following combination is very valuable, after the primæ viæ have been well cleansed. Ext. Opii. gr. i Quinæ Sulph: Ammoniæ Carb: aa gr. ii to be given every 3, 4 or 6 hours according to the severity of the case. Wine or beer too should be given with nourishing food. Nitric acid, opium lotion, and charcoal poultice I have found to be the best local remedies.—H. H. GOODEVE.

terebinthinate dressings, solutions of the chlorides, of nitrate of silver, lotions of diluted nitric acid, and the black wash; these are probably useful, much in the order, in which they have been now enumerated.

As a last resource, amputation is worthy of a trial.

It must be superfluous on the present occasion, to direct your attention to the fetters of the prisoners; the ankle-rings of these ought to be well-polished, the limb at that part defended by a leathern *moza*, such as the prisoners frequently adopt of their own accord, and every precaution taken, that no unnecessary or uncalled for suffering is inflicted on these unfortunate people.

Before concluding, the Board desire me to recommend to your perusal two communications on this subject to be found in the 3rd volume of the Transactions of the Medical and Physical Society of Calcutta, by the late Dr. Adam, and the late Mr. Assistant Surgeon Leslie, as well as the valuable observations of the late Dr. Hennen, on the same subject, in his Principles of Military Surgery.

The Board have every confidence in your abilities, and they are satisfied, that under your care, the sick will meet with every attention, that humanity can dictate. To enable them to render you the most efficient assistance on the occasion, the Board request, that you will report to them direct, every third day, on the state of the sick, and the measures you have taken for their relief.

I have, &c.

(Signed) • JAS HUTCHINSON,
• Secy. Med. Board.

From G. N. Cheek, Esq.

Assistant Surgeon, Bancoorah,

*To the Secretary of the Medical Board,
 &c. &c. &c. Calcutta.*

SIR,

I have now the honor to reply to your letter of the 7th January, No: 943; though by the documents handed, previous to receipt of your letter, you will have been able to form an opinion of what has been done, to alleviate the state of the sufferers in the hospital of the Bancoorah jail, for the last three months.

You will allow me to draw your attention, in the first place, to the worst of all diseases, (cholera not excepted,) hospital gangrene; premising, I have every reason to believe, the virulence of the disease has left us; though melancholy is it, that so many have fallen victims to it.

To gangrene, unfortunately, I am no stranger, having witnessed its ravages on the continent, where, *in* men, who had suffered amputation, and had so far recovered, as to have been sent to the convalescent depôt, whose stumps scarcely required any dressing, in one night have I seen the stump become one putrid mass; such cases very rarely recovered. The disease I have lately had to cope with, has different features; the cases, generally speaking, consist of men of debilitated constitutions; who sink very rapidly.

They come into hospital with a small sloughing sore, no feverish symptoms; the countenance indi-

cates however great depression, and shows a violent disease is going on, still the sore is not of that nature to cause any alarm; a change for the worse soon takes place, and likely, on the second day, one is surprised to see the sore so much increased, to what it was the previous day, the edges turned up; in fact, I cannot describe the appearance better, than in the words used by Dr. Hennen, in his work on Military Surgery, viz. the "cup-like appearance." He does indeed give too faithful a picture, and when comparing what he says, with the disease going on, one is struck with his minute, and careful observation, and I would fain hope, I could not have taken a more experienced man for my guide.

He places however little dependence on nitric acid; and in the diluted state, as used by him, I agree it is useless; though the undiluted acid I have found a very valuable remedy, and I wish I had used it, at first, instead of applying it in the diluted form. The undiluted, if used at the commencement of the disease, will, I think, in general, be found of use; after it has reached any height, and the diseased surface is extensive, I do not think it does any good; in fact I hardly know what is efficacious, or what can be depended on.

Opiates, at the time the nitric acid is used, combined with quinine, will I think be found of great use; at least so I have found them.

Cases have I had, in which the leg or hand appeared like a half-dissected limb. Dr. Griffiths, when he passed this, saw some of such cases, and he was

of opinion, the only application likely to be of use was the actual cautery; but even this he expected no good from. All the cases he saw died, and I am glad, I did not use the actual cautery; as the pain is dreadful, and as in such cases it can do no good; if the actual cautery would at any time be of use, it is before the wound gets very extensive, and then I prefer nitric acid, as it has all the good effect, (and is under control), without causing nearly the pain of the actual cautery; in a word, I should not like to have recourse to treatment, so little practised in British Surgery, except in consultation.

Next to the nitric acid, have I found the solution of arsenic of use; but this, like the nitric, if not used at first, is of little service. I wash the sore clean of all filth and matter with solution of subcarbonate of potash, either cold or tepid, as most agreeable to the feelings of the patient, previous to applying it.

It is not the wound alone, we have to do with, the constitution flags, and in all the cases, I have lost, the patient has sunk under a violent affection of the bowels, obliging me to discontinue tonics, and forcing me to place reliance alone, (if any can be placed,) on opiates. They may, and they do afford temporary relief, but no more; they ease the sufferings of the patient, but leave no hope of removing the disease of the intestines; when once the evacuations put on that slimy and bloody appearance, I have despaired, and my opinion has been too correct, as to the result.

I have used the following local applications, common poultice, effervescing ditto, linseed ditto, charcoal and opium, bark and opium, rhubarb, the balsams, tincture of myrrh, spirits of wine, spirits of turpentine, diluted nitric acid, undiluted solution of arsenic; also have, in those cases where the ulcer was not very large, applied cold water with oil cloth placed over it.

Poultices do harm; they relax too much the debilitated vessels, and I wish I had not used them so freely at first; since I have discarded them, the wounds have done better.

The treatment I find of most service is the nitric acid, or solution of arsenic, and afterwards to apply a pledget, covered with ung. res. flav. c. tereb., using, if the bowels will admit of it, quinine and opium, with as generous a diet, with brandy and wine, as I can get the patients to use.

I would farther state, I have tried the use of mercury; in every case I found it did no good; on the contrary, so long as I continued it, the sore increased, and the patient daily got worse. In cases, in which I have tried the black wash, it has been useless.

Amputation would have been tried in many cases, had I hoped for any good effect. I have before tried it, and found it of no avail. In the cases lately under treatment, I should have been averse to use the knife; there being no separation of parts,* and

* I confess, I am somewhat sceptical, if Dr. Cheek has not here rated too low the advantages to be derived from amputation, in this

besides, the disease appeared to have taken such hold of the patient, that in my opinion, it required constitutional treatment, more than local. I very much

destructive disease. In the commencement of the year 1827, when hospital gangrene prevailed to a distressing extent among the native troops, stationed at Prince of Wales' Island, amputation was had recourse to, in upwards of forty cases, and with a successful result, in rather more than one-half of them. The following observations on the subject, from the pen of Dr. Geddes, of the Madras Establishment, who was present at the time, appear to me highly valuable, and worthy of the most attentive consideration. "The question of amputation is one of primary and vital importance, and indeed, it would be a happy circumstance, if we could rely upon it, as a safe alternative, when other and milder measures fail us; but I fear, that in most cases, this *ultimum remedium* is delayed too long, and that under the humane but mistaken expectation of saving a limb, much more injury is done, than would *cæteris paribus* have followed the earlier adoption of such a sacrifice. The sore runs so rapidly through its respective stages, progressively deteriorating, and mortification so very hurriedly supervenes, that doubts and hesitation are liable to hazard life.

"Waiting for 'the line of demarkation,' is only sealing our patient's death-warrant, and decision in a case, (as it indubitably is) of life or death must be prompt and final.

"If a sore have resisted for three or four days all the usual means of cure; if the subjacent tissues are becoming deeply affected; if hæmorrhages supervene; if the constitution be participating to a high degree with the local affection, our only hope of safety is in the knife; and in many instances, we will be gratified with the patients' speedy recovery. To obviate the danger of the stump becoming contaminated with the prevailing affection, we must be careful, if possible, to remove our patient to a purer atmosphere, to inculcate the absolute necessity of cleanliness, and to use every precaution, that no communication take place between the convalescent, and the affected.

"Having spoken so freely respecting the propriety of early amputation in this disease, I with regret acknowledge, that had I at first acted

wish, I had an opportunity of showing you some of the cases, (I hope recovering;) they would tell you what I have had to cope with, better than any description I could give in a letter.

Cholera has been very fatal, and such cases I scarcely ever witnessed. Many have been attacked in the town; but I have heard only of one case, that has escaped—the child of a *jemadar*, who applied for medicines from my hospital.

In about half the cases I have treated, my usual medicines have had a fair trial, viz. emetics, and large doses of calomel and opium; about half so treated, died; and some who recovered, were so much reduced by the calomel, (although their mouths were not affected), that I deemed it right to try smaller doses of the mineral, and I have since given calomel. gr. ii., extract opii. gr. ss. camphor, gr. ss., c. pip. nigr. one grain, every half hour, till the symptoms abate. About half so treated, have recovered. I am now trying, in the onset, emetics; afterwards calomel, opium, camphor, &c. The cases are so rapidly fatal, very little time indeed is allowed for any medicines to take effect.

on the principles here laid down, several of our patients would, in all human probability, have lived. But inexperienced in the disease, and deceived by the occasional gleam of improvement, which the sores exhibited, I was induced to delay; however, observation soon taught me a different mode of conduct and practice."

See Remarks on Malignant Ulcer and Hospital Gangrene, by J. L. Geddes, Esq. in the 6th volume of the Transactions of the Medical and Physical Society of Calcutta, p. 164.

Next to cholera and gangrene, dysentery, in its chronic form, has destroyed many of the convicts; and I confess, in this disease, it is hard to say what does good. Palliatives, such as pulvis Doveri, we have used; the relief is only temporary. I think I have found pil. hyd., ext. gent., pulv. ipecac., and ext. op. the most beneficial, *but as the cases, that come under treatment, besides the bloody evacuations, have general swelling over the whole body, more particularly the arms and legs, and a bloated countenance, tongue white and glazed, a short cough, and quick low pulse,* I must say, in such cases, I have but little hopes of being of service.

All the sick have been in tents, in the day time, sleeping at night in the hospital, which has been carefully cleaned; the other convicts are now in tents. Straw I have not given to the people; but they have a warm blanket each. I trust; as a stop has been put to the blankets, and clothes of the dead men being returned into store, and given out again to other prisoners, that we shall see our jail in future clear of this scourge. Nothing was so likely to keep up the infection, and I regret, I did not sooner find it out. On my writing to Mr. Russell, the custom was discontinued, and since then, all blankets and clothes have, been destroyed with the bodies. I recommended that flour should be given to the convicts in preference to rice, (the prisoners like rice best,) it was given for some days; but has been discontinued, and the correspondence regarding it handed through the commissioner to the superior courts.

With the rice, to the men in hospital, condiments are given, and I give a *paun* to each man after his meal; in fact, I hope all, that man can do, has been done for their benefit.

I do not think, the prisoners are overworked; my opinion is, if they were constantly kept on the roads, even in the rains, (temporary huts could be erected,) the men would be far more healthy, and their services of use to the state. You will find, all acquainted with prisoners will corroborate what I say, that in every *zillah*, the men are more healthy, when out working, than when confined in jail.*

You will be good enough to draw the attention of the Board to the fact, that by far the greater number of deaths have occurred among that class of prisoners, from the jungle and hill states; and certainly what you propose, regarding erecting a jail, in the part of the country, these people come from, would be worth a trial. It could be tried at a small cost; temporary huts would do very well. I am pretty sure, it would prevent my reports showing such dreadful mortality.

I hope this reply, in addition to what before I have had the honor to hand you, will be satisfactory; and I have only to thank the Board for pointing out works for my perusal, that might have been overlooked; they will see my stand-by has been one, they

* On this subject refer to the 38th and three subsequent pages of this work.

drew my attention to, and which to my mind is an invaluable work.

I have, &c.

Jungle Mehals, } (Signed) G. N. CHEEK,
Jany. 16, 1833. } *Assistant Surgeon.*

In other letters received from Mr. Cheek, about the same time, with that now quoted, he reports, that all the ulcers in question were ordered to be washed, instead of sponge, with wet tow, which he caused immediately to be destroyed; and that all bandages, dressings, and other articles of the sort, employed about such cases, were treated in a similar manner.

In addition to these measures, I would strongly recommend, that when hospital gangrene shows itself, the cases of that disease should be accommodated in tents, in which the freest circulation of air should be maintained; and while a single patient ill of the disease remains in hospital, and indeed for some time after, that all other cases of ulcer should be treated in the jail wards, and dressed by persons totally unconnected with the establishment employed about the hospital.

It has been suspected by some, that there is some latent connection or similarity between the state of the atmosphere, which produces cholera and hospital gangrene, but I am not aware, that there is any better foundation for the supposition than conjecture. It is somewhat in favor of it, that the number of deaths from cholera, hospital gangrene, fever, and dysentery, were exceedingly numerous indeed, at

the time specified, in the Bancoorah jail, and occurred principally among the unfortunate inhabitants of Chota Nagpore and the surrounding districts, who were brought in as prisoners, in great numbers, during the Cole campaigns. Disease among them ran its course with a degree of virulence and rapidity almost unparalleled.

What was the cause or causes of this dreadful mortality, it is difficult to determine. It is not impossible, however, that the principal may have been nearly the same, as those, which destroyed the remains of the army of Sir John Moore, viz. the operation of the depressing passions, and the want of adequate space, and a sufficiently pure atmosphere to support the human body in a state of health. For my own part, I am greatly inclined to suspect, that the appalling mortality, which took place at Bancoorah, from dysentery, hospital gangrene, and fever, was intimately connected with the prevalence of scurvy, in an acute form, occasioned by poverty of living, the influence of the depressing passions, and a too crowded state of the jail. The passage in the report of Mr. Assistant Surgeon Cheek, which I have marked with Italics, goes far in support of such a supposition. It may be objected, that hospital gangrene is often communicated in a night to a person previously in the enjoyment of the highest health; but this is in reality no valid objection, but a corroboration of the opinion; for gangrene, which, occasionally, confessedly arises from particular kinds of food, may in like manner be communicated to

what is denominated a healthy ulcer, and the constitution subsequently take on the diseased action. The great mortality, which, on one occasion, took place in the Milbank Penitentiary, is supposed to have been intimately connected with the scorbutic diathesis; although the disease manifested itself principally in the forms of diarrhœa and dysentery.*

Post-mortem examinations sufficiently showed, that these, apparently uncontrollable cases of dysentery, hospital gangrene, and fever, particularly the two latter, were frequently connected with deep and ex-

* In how far this opinion is supported by the following extract from a letter, dated the 11th of March 1844, and consequently written about ten years after the above, by Dr. C. Kenny, Superintending Surgeon of the Cawnpore Circle; I leave the reader to determine—

“The opinion I had formed of the sickness at Mynpoory was, that scurvy existed during the whole time referred to, and, infecting as well other diseases, was the great cause of the mortality; it was clearly distinguished in the beginning of October, and the same disorder was then also seen in other jails, as I shall afterwards more fully specify. The œdema mentioned is a strong mark of the disease, usually shewn in the puffiness of the face, and swelling of the limbs. The characteristic spongy swelling of the gums is not described, but was a general symptom there, as in other places, with or without discolouration. Great pain in the lower extremities was stated as an indication in one hospital. Diarrhœa and dysentery are common terminations of the disorder. The morbid state of the lungs observed in numerous cases, on post-mortem examination, does not invalidate the opinion advanced, it being reconcileable to experience, that in the depraved condition of the system, and particularly of the blood, which exists in scurvy, abscesses or tubercles may form in the substance of the lungs, without that acute inflammation, which would otherwise be required. Ulcerations of the intestines are found in many cases.”

tensive disorganization of the lungs, and indeed of the vital organs generally, which had not previously been suspected. I subjoin a few of the most remarkable dissections, that the reader may be able to judge for himself.

Dysenteric Cases.

Surroop Ghose, admitted 11th Feb., died 28th March.—Dysentery.

Post-mortem examination.

Thorax—Lungs—Left adhering at the back part, lower lobe filled with frothy effusion. A small portion, near the lower part, had very much the appearance of an old pulmonary apoplexy. Right lung just in the same state,—heart healthy.

Abdomen—Liver natural; spleen healthy, stomach contracted, and showing much the appearance of a thickened small intestine: it contained nothing but a little glairy mucus: rugæ on its internal surface appeared more numerous from its contraction; a large lumbricus in the duodenum; colon filled with fæces, several large and deep ulcerations on its internal surface, and many abrasions not so deep; mesenteric glands very much enlarged; rectum, coats much thickened, ulcerations through its whole extent, several of them $\frac{3}{4}$ of an inch in diameter; small intestines natural; kidneys healthy; the bladder contained a large quantity of water.

Head—An immense effusion under the pia mater; substance of the brain very white, and soft; right ventricle contained a little effused serum, and the spinal canal a large quantity of water.

Sirdar Singh, admitted 17th February, died 10th March. No disease mentioned—probably dysentery.

Thorax—Extensive adhesions on both sides; left lung contained two deep-seated abscesses, one large enough to hold half an ounce of matter: lung broken down, and impervious to air; right lung exactly in the same state, four or five abscesses; upper lobes of both pretty healthy.

Trachea also contained matter; internal membrane was thickened, and about the larynx showed marks of previous inflammation; heart natural.

Abdomen—Liver healthy; spleen natural, omentum black; peritoneum looks, as if far advanced towards putrefaction; colon and rectum ulcerated from one end to the other; ulcerated spots black, but penetrating only through the inner coat.

Brain—Effusion on the surface, and in the ventricles.

Dial Magee, admitted 13th February, died 11th March.—Dysentery.

Post-mortem examination.

Body—Much emaciated.

Thorax—In the left side was discovered upwards of 4 lbs. of fluid, of a brownish tinge; in the right side, about half the above-stated quantity; left lung infiltrated through its whole extent, more particularly the lower lobe; the same purulent matter followed the scalpel, through the whole viscus; right lung showed exactly the same appearance as the left; heart healthy, though rather of a pale appearance.

Abdomen—Liver of a grey color, a little enlarged; gall-bladder full, containing thick black bile, like tar; omentum natural; mesenteric glands a good deal enlarged; spleen and kidneys healthy; intestines contained a dark terraceous matter; colon very extensively ulcerated, not extending beyond the inner coat; rectum very much ulcerated, extending into the muscular coat; cæcum—inner lining, much inflamed, and studded with dark spots: no ulceration.

Head—Brain vessels of, nearly empty; surface of brain peculiarly white: no effusion; ventricles natural; about three ounces of serum were discovered between the cerebrum and cerebellum.

Shaik Rufeek, admitted 22d December, 1832, with chronic dysentery, died 25th January, 1833.

Thorax—Lungs nearly destroyed.

Abdomen—Liver schirrous; remainder of the gland very black; coats of the stomach very much thickened; spleen healthy; omentum a good deal diseased: no ulceration of the intestines.

Doocum Moirah, admitted 11th November, with slight fever, swelling of the face, and oozing of blood from the gums. 13th January, was attacked with dysentery. Died 25th January.

Thorax—A large quantity of fluid in the cavity; lungs destroyed by abscesses, and on cutting across, a large quantity of matter was perceived.

Abdomen—Liver considerably enlarged; spleen three times its natural size; on omentum, black lines were distinguished, and the intestines were marked with dark spots: no ulceration had taken place.

Jeet Rai, admitted 14th November, with swelling of the whole body, and dysentery. On the 15th January, gangrenous sore of the upper lip took place. Died on the 22nd January.

Dissection—Lungs much ulcerated; liver in a like state, and on pressing it, a large quantity of pus escaped; the intestines marked with black spots; omentum marked with black lines; contents of intestines black, dirty, tenacious stuff adhering to coats of intestines.

Joynauth Boomish, admitted with dysentery 6th January, died 24th January.

Dissection—*Lungs*, both sides much diseased; *liver enlarged*, and a large abscess in the centre: appearance of the liver very black; spleen about five times the natural size.

On opening the abdomen, a large quantity of water escaped; intestines contained matter like water, in which putrid flesh had been soaked.

Gangrenous Cases.

Tribobun Koormi, admitted 25th November, died 8th February—Gangrene.

Thorax—both lungs much diseased.

Abdomen—Liver enlarged, and very white: in the centre of liver one black spot, on cutting into it, found deep seated matter; stomach much enlarged, on opening it, a large quantity of green fluid of the smell of the sore was found; omentum much discoloured; intestines spotted; spleen healthy. Gangrene extended from near the foot to the hip; the whole of the tibia nearly laid bare.

Shaikh Doolul, admitted 12th January, with gangrene of the leg, died 30th January, 1833.

• Thorax—Lungs healthy.

Abdomen—Liver much enlarged, very white, and sclirrous; stomach of an enormous size, with dark spots, on cutting into it, a large quantity of matter escaped; intestines, dark spots, and ulcerated: contents of intestines, black matter, of the same smell as the gangrenous sore.

Mohun Boomish, admitted 22nd February, with slight diarrhœa; after which, was attacked with swelling of the face. On the 10th, gangrene shewed itself, at the outer part of the lip. Died March 11th, 1833.

Post-mortem examination—Body considerably emaciated, and anasarçous. On cutting into the cellular texture, serous effusion was observed to a considerable extent.

Thorax—Considerable adhesions on both sides: on separating which, in the cavity, on the left side, were

found 4 lbs. of fluid: right side, no effusion; upper lobe of the left lung healthy; lower lobe hepatized, and semi-purulent matter oozed out, in all directions, on cutting into it; right lung healthy; aorta coats of, considerably thickened.

Abdomen—Liver considerably enlarged, otherwise healthy; gall-bladder very full of well-formed bile; intestines, large and small, healthy; large spotted externally, internal coat shewed no marks of inflammation.

Head—Brain bloodless, and particularly white: considerable effusion between the brain and membranes; four ounces of effused fluid between the cerebrum and cerebellum; ventricles healthy.

In making a section of the gangrenous part; from the angle of the jaw to the centre of the chin and right eye was included, in one mass of disease.

Gyram Bhat, admitted 15th October, died 6th February.—Gangrene.

Thorax—Abscess of lungs; heart healthy.

Abdomen—Liver spotted: on cutting into the spots, matter was discovered; upper surface of the gland schirrous; spleen healthy; stomach and intestines spotted: on cutting into the intestines, matter similar to the discharge from the gangrenous sore was found. The gangrene extended from the lower part of the leg to the hip, exfoliation of the tibia had taken place. Portion of exfoliation herewith sent.

Fever Cases.

Boobund Boomish, admitted 18th January, with fever, died 22nd January.

Dissection. Both lungs a mass of disease; liver considerably enlarged; intestines healthy, containing dark tenacious matter; *pericardium* contained 16 ounces of water.

Dalim Boomish, admitted 18th January, with fever, died 22nd January.

Lungs much diseased; *liver* enlarged; omentum very dark; spleen healthy; intestines contained a large quantity of black feculent matter.

Toolseeram Mahah, admitted 21st January, with fever, died 24th January.

Dissection. Right lung much diseased: *pericardium* contained a large quantity of water; liver much enlarged; and a large abscess in the lower portion; omentum much discoloured; *spleen* healthy; contents of the intestines of the appearance of mud.

Mohun Bagdee, admitted with fever, 21st January, died 24th January.

Both lungs much diseased; pericardium contained 12 ounces of water; liver enlarged, and very black; *spleen* healthy; contents of the intestines like water, in which putrid flesh had been soaked.

Kalleechurn Thewas, admitted 19th March, with catarrhal fever, died 28th March.

Sectio Cadaveris.

Lungs—Adhesions on both sides, most extensive on the right; left lung red, and presenting much the appearance of rotten flesh, so soft that it easily broke under the finger; right lung adhering very firmly to the diaphragm: an unusual quantity of blood in the venous vessels of both: proper substance of the right lung much the same as the left; heart healthy, containing a quantity of fibrine.

Abdomen—Shewed considerable congestion of the large veins; liver of an enormous size, and soft: lower edge of the large lobe white, and indurated; gall-bladder very much contracted, and impacted with stones; a large one blocked up the duct; considerable congestion of the mesentery, and enlargement of its glands; colon contained matter like sheep's dung, broken down; rectum the same; stones in the gall-bladder, in number, six large, and about a dozen small; kidneys enlarged, but not much diseased in structure.

Head—Not opened; urinary bladder, internal coat ulcerated all over, and cicatrices of old sores observable in several parts.

Tuschā Boomish, admitted into hospital 21st December, 1832, with dropsy, died 28th January, 1833.

Thorax—A large collection of water in cavity; in pericardium 16 ounces of water; on both right and left lung, black spots, the size of a rupee: on cutting into which was found thick dark matter.

Abdomen—Liver peculiarly white, and schirrous; spleen very much enlarged, and in the cavity of abdomen a large collection of fluid.

Muttoor Raick, admitted 14th January, 1833, with fever, died 28th January, 1833.

Thorax—Left lung, the whole filled with a large quantity of matter.

Abdomen—Liver considerably enlarged, of dark colour, and considerably hardened in the centre; intestines and spleen natural.

Gobindhu Boomish, admitted 18th January, 1833, died 28th January, 1833.—Fever.

Thorax—Both lungs much diseased, and filled with matter.

Abdomen—Liver much enlarged, of a white appearance; intestines and spleen healthy.

It is a question to be asked, which I am inclined to think, humanity will answer in the affirmative; if, when disease of a deadly character prevails to a great extent, persons in an apparently hopeless or dangerous state, whose crimes are not of the deepest dye, ought not to be liberated from farther confinement, and allowed to enjoy perhaps the only chance of recovery, which they have at such times, viz. from change of air, and the society and attentions of their friends.

In sanctioning any measure of the sort, however, great care should be taken, that it is not too frequent:

ly had recourse to ; for no one can deny, that it is open to abuse, either by the patients or the medical officer in attendance : by the former, by their working on the feelings of the surgeon, through a natural desire of regaining their liberty, and by the latter, from a wish laudable in itself, if properly kept in control, of presenting as favourable a report, as possible, to the superior medical authorities.

CHAPTER X:

*Of the Fevers and Alvine Fluxes of the Natives.**

I have long contemplated sending you a few observations on the bowel complaints, which affect the Sepoys of our Regiments, and the inmates of our Jails; but I have hitherto delayed, in the hope, that sufficient leisure would have occurred to me, to admit of doing so, in a more regular form. In this I have been disappointed: and I think it better to communicate what I know on the subject, without farther delay, in the shape of a general letter, than to postpone it, in the hope of being able to furnish a more systematic, though, probably, not a more useful communication.

I shall not attempt to enrich my pages with the opinions and descriptions of writers, whose works are already at the command of the profession; but shall confine myself to the few practical observations, which my own experience has enabled me to make.

No disease, I feel convinced, is of more paramount importance to the members of our profession, in this country; and this, I have no doubt, will be admitted, when it is recollected, that, probably, not less than

* Originally communicated in a letter to the Secretary of the Medical and Physical Society of Calcutta, and published in the 5th vol. of their Transactions. For farther information regarding this Chapter refer to pages 96, 97, and 98.

three-fourths of the deaths, which occur in our native Military Hospitals and Jails, are occasioned by the various types of this malady. It is only to be wondered at, considering the importance of the subject, that the relative merits of the different modes of treatment have not already been set at rest, and that any thing should now remain to be said, on a disease, which is of so frequent, and of so fatal occurrence.

The attention of the Society, however, has lately been turned to the subject; and, I trust, that it will not be allowed to subside, before the various types of the disease have been accurately investigated, and the relative merits of the different modes of treatment fully ascertained. In this course of inquiry, Mr. Tytler led the way. To him succeeded Mr. Twining, a gentleman whose unwearied zeal, and acute observation have thrown a ray of light on this, as on every other subject to which his valuable labours have been directed. His remarks, however, would appear to be entirely confined to the disease, as it appears in the European constitution; and I am inclined to think, that the measures recommended by him, would not be attended with the same favourable results, in native patients. When his paper first appeared, I attempted to carry his plan of treatment into effect, although it is but fair to state, in a somewhat modified, and less active form; I was glad, however, to recur to my own system, which I had then found, and continue to find, tolerably successful.

I am unwilling to use strong language, or to hold out expectations, which may prove delusive; but I

indulge a hope, that the mode of treatment, which I will point out, may prove of some service to young medical officers, on their first arrival in the country. To the rest of my medical brethren, I am aware, they can communicate nothing new; they may even here, however, be of advantage, in keeping alive attention to a subject, so richly deserving it,—nay, so essentially requiring it.

In general, the disease, when it appears in an idiopathic form, is far from intractable; in two thirds of the cases, however, which occur, it would appear to be the result of former attacks of disease, or of the remedial measures, which have been adopted in their cure.

This, necessarily, leads me to make a few general observations on the seasons, the native constitution, and its diseases, so far as may appear connected with my present subject; but before doing so, I wish to disclaim, once for all, all intention of dissuading any one from the use of Calomel, where such is obviously required: it would be worse than ridiculous, under such circumstances, to neglect the most important remedy in many of the diseases of India, under the terror of some remote danger, which, after all, may be little more than imaginary.

From the commencement of the year till July, the number and severity of the cases in our native hospitals, may be said to be comparatively unimportant; during this period, indeed, sporadic attacks of Cholera occur, and the small pox not unfrequently commits frightful ravages; but the after effects of any particular plan of treatment are not so much to be dread-

ed, the season is favorable for convalescence, and the patient has some time before him, to regain his accustomed health. From July till the commencement of the following year, there is a vast increase of disease. During the first quarter of this period, fever of the remittent type, with occasional 'bowel' complaints, prevails; while, during the subsequent quarter, the fevers frequently assume an intermittent form; and the various forms of flux increase much, both in frequency and severity, and a mortality proportionate ensues.

Let us now inquire into the cause of this, and how far the frequency and fatality of these affections may be supposed connected with their fevers, or any particular mode of treatment, adopted in their cure.

Since I have had recourse to the mode of treating the remittent fevers of the natives, which I at present employ, I have not happened to be stationed in an unhealthy part of the country; but where I have been, I have ever found them exceedingly tractable, and to require little more than a small dose of Calomel at the beginning, followed up by the exhibition of the Tartar Emetic mixture*, for a few days, so modified, as at first, to act both as an emetic and purgative, and afterwards only mildly on the bowels, but more actively on the skin. To this

* Tartar Emetic Mixture. *R.* Tart. Antimonii gr. vi. Sulph. Magnes. \mathfrak{z} ii. Aquæ \mathfrak{z} xxiv.

Two ounces of this, every three hours, will act both as an emetic and purgative, and one ounce, every three hours, slightly on the bowels, and freely on the skin.

may probably be added an Antimonial, at bed time.* In a few days the fever disappears; the patient is pretty well in the morning, but gets a little warm towards evening. This is a state, which a light tonic, such as the Cheraÿta, with Nitric Acid, or the native pill of Kut Karanja, or a few doses of Quinine given from time to time, for some time after, during the absence of the fever, will readily correct.

Where the fever assumes an intermittent form, the Kut Karanja will still be found exceedingly beneficial, and with the Arsenic and Quinine, leaves us little to desire on this subject†.

When any local determination presents itself, the latter remedies are, of course, inadmissible; and our great reliance must be placed on early venesection, repeated, as circumstances may point out. On the other

* *R.* Pulv. Antimonial. gr. v.

Camphor. gr. ii.

ft. Pil.

Vel,

R. Mist. Camphor. ℥ i.

Vini Antimonial. gtts. L.

ft. haust.

Vel,

R. Vini Antimonial. gtts. L.

Tinct. Opii gtts. xxv.

Aq. ℥ i. ft. haust.

† The following draught, immediately before the commencement of the cold fit, will be a most powerful auxiliary. *R.* Tinct. Opii. ℥ i. Vini Antimon. gtts. XL. Aquæ Menth. Pip. ℥ i. Misce.

ft. haustus.

hand, should a strictly mercurial treatment be adopted, every symptom of the fever becomes aggravated, the convalescence, and stay in hospital, are protracted, while, in reality, the patient does not, for months after, entirely regain his usual health and strength.

During the whole of this time,* it cannot be supposed, that a constitution saturated with mercury, and alive to every breeze that blows, is well calculated to resist the influence of the exciting causes of this disease. Accordingly, does a native so circumstanced, get wet on duty; does he sleep out at night, exposed to the damp, and dew; does he use fruit, or too great a quantity of vegetables; or is he on service, and confined all day on board of a boat, and cannot; or is he too weak to be able to cook, and satisfies the cravings of hunger with some crude indigestible article of food,* uncooked; it is ten to one, he does not escape with impunity.

This is particularly the case with Sepoys, who have just come down from Hindoostan proper, and are yet unseasoned to the climate of Bengal, and our Eastern provinces; nor can we be surprised at it, when we recollect, that they have just exchanged the fine, pure, bracing air of Hindoostan, for the raw, damp, miasmal atmosphere of Bengal, with its whole brood of splenitic and cachectic diseases; and the wholesome wonted diet of wheaten flour, for the poor nourishment to be derived from a washy dish of rice:

* Gram and rice, both parched and raw, are in common use, and are particularly noxious.

while the eternal verdure and vegetation of the country offer a never failing supply of fruits, at a price, at which even a native cannot repine.

To me it appears as inexpedient to salivate a native, under such circumstances, (where it possibly can be avoided,) as it would be to put an European, on a full course of mercury, after having lived for months on a vegetable diet, and to allow him nothing more congenial, during its progress, or for months after.

In cases which occur after treatment of this nature, every feature of the disease is, of course, aggravated, and the mortality fearfully increased. Under any form of treatment, the disease will be occasionally fatal, but, in my opinion, our hopes of success must intimately depend on the treatment of the previous disease, the season of the year, and the yet remaining stamina of our patient.

Idiopathic cases of the disease, and especially those which occur from the beginning of January, till that of July, are generally attended with little danger. During these months, the air is pure, and dry, and of a congenial warmth to the natives: the skin and liver, accordingly, go on performing their respective functions cheerfully and abundantly; no sooner, however, does a change of weather commence, in August and September, than these secretions are checked, and vicariously thrown on other organs. These, the great thermometrical variations, the insufficiency of covering, the damp and wet, and the debility of former disease, generally determine to be the abdominal viscera.

Such appear to me to be the principal causes which pave the way for, or more immediately induce attacks of this disease ; and it must be superfluous, on my part, to urge Officers in charge of Regiments or Jails, to adopt every precaution, consistent with their other duties, for the preservation of the health and lives of those committed to their charge.

The former ought to be very cautious, in having recourse to heavy morning parades and exercises, at that season, and when sickness prevails ; and the latter ought, on no account, to postpone the distribution of the prisoner's annual blanket, beyond the 1st of October, while forty or fifty spare ones ought to be set apart, for the exclusive use of the sick in hospital.

That there are many varieties of Alvine Flux, I am well aware ; unfortunately, however, the circumstances in which we are placed in this country, do not admit of our being able, minutely, to discriminate them by symptoms. Let us be ever so intimately acquainted with their language, it is still foreign to us ; its dialects vary in the different provinces of the empire ; and the ideas by which the natives illustrate their feelings to us, are likewise foreign. Moreover, the natives of this country, like other enslaved nations, are cunning and crafty in the extreme. Have they observed, that their medical attendant is fond of bleeding, leeching, or blistering, it is in vain that he will inquire, if they suffer from pain ; they will deny it. In this state of affairs, we are thrown upon our observation of external appearances, and happily,

in this instance, from the state of the excretions, we may judge pretty accurately of the internal disease.

In this way, I may point out several varieties of *Alvine Flux*. • 1st, we have the simple *Diarrhœa*; the stools are more frequent than usual, probably four or five in the course of the twenty-four hours; still, however, they are natural in appearance, and scarcely more liquid than pultaceous; the patient's appetite is impaired, and he has suffered in strength and flesh. As the disease proceeds, the feet swell, and he dies quite worn out and exhausted. In this state, there will be found a blush of inflammation, over various spots of the intestinal tube; and the vessels of the mesentery and posterior peritoneum will appear injected, blue, and glistening. •

2ndly. We have the true *Dysentery*, attended with slight heat and quickness of pulse, scarcely more than perceptible; the stools are probably costive, scybalous or pultaceous, but mixed with quantities of white mucus, which is probably tinged with blood. In this state, we shall find the colon and rectum involved in inflammation, especially towards their inferior terminations; and should the disease have been of long continuance, and terminated fatally, ulceration of their inner coats will have taken place.

3rdly. We may meet cases where the evacuations are extremely watery, consisting almost entirely of a clear liquid, in which white shreds, or a quantity of clear mucus, mixed with blood, is floating, with little or no appearance of feces; the pulse, in this stage, is full, and a little quick; the skin slightly warm; the coun-

tenance of a sallow pasty appearance, and the abdomen slightly hard, and tense. If the complaint is not checked in this stage, the heat of surface will increase; the pulse will become frequent and weak; the watery evacuations, will be increased in number, but of a less favorable appearance, till at last they assume the appearance of dirty water, in which carrion has been washed. Fœculent stools, however, may still I believe be obtained, by laxative medicines.

On dissection of a person, who has died of this type, the Caput Cœcum Coli will be found to have borne the brunt of the disease. It will be found converted into a fleshy mass, with numerous internal ulcerations. On the three or four lower inches of the Ilium, will be found an occasional cluster of vesicles, like small air bubbles, and these, I believe, to be the rudiments of future ulcerations. The whole length of the Colon and Rectum, externally, will be found inflamed, and thick and fleshy to the feel; and on laying it open, its whole extent will be found covered with ulcerations. These are about the size of a sixpence, or larger, with angry, red, inflamed edges; while the whole surface of the ulcer is covered with a greenish yellow, tenacious matter or crust, not unlike the slough of the carbuncle. In addition to these appearances, the peritoneum will, probably, be found inflamed, opaque, and thickened.

There is a fourth species of Alvine Flux, which I have probably not seen immediately on its commencement, and I have never examined the bodies of any who have died of it. I shall nevertheless describe it, such as it has occurred to me. The patient is

reduced; the features sharpened; the countenance of a sallow, pasty, appearance; the abdomen is flat, and shrunk towards the spine; the pulse running and thready; the motions frequent, copious, and thin but feculent, and exceedingly offensive; while such an odour exhales from the whole body, that if the disease have been once seen, it is impossible not to recognize it. In short, from the first sight of the unhappy patient, one would pronounce, without hesitation, that the hand of death is on him. I have seen two cases of this form of the disease, at this place, and neither of them, I believe, survived beyond a week. Of the appearances on dissection, I am ignorant, although I think it not improbable, that they are connected with inflammation of the inner coats of the small intestines.

There is still a fifth species, in which the stools are frequent, copious, liquid and feculent; sometimes frothy; this is accompanied by slight fever; the abdomen is sometimes slightly tumid, and the countenance lurid and cachectic. This state is probably connected with splenic affection, or a state of constitution resembling that which prevails in it, and would appear to be more under the control of small doses of the Spleen powder, or the native pill of Garlic, Aloes, and Sulphate of Iron, than any other remedy. I have mentioned these varieties more with the view of directing the attention of others to the subject, than under the impression, that they can be of much use as they now stand; besides, I willingly acknowledge, that the data, on which they have been founded, are too slight to be absolutely depended on.

I have seen the whole of these affections described as one disease, under one name: but in this opinion I cannot coincide, and I can only suppose, that the error originated from drawing conclusions from the helpless objects to be found in the Bazars, where the whole of the original distinctions have been obliterated, by the progress of the disease; but where, haply, the attentions of the physician or philanthropist may still be crowned with success.

The lives of our fellow creatures are of too much importance to admit of random assertion, were I inclined to hazard it; and I wish the whole of what I may now write, to be considered merely as pointing out the necessity of the closest observation, on the part of the profession, and the tract in which I think the experiment may be most rationally conducted, and with the best hope of success.

I am unwilling to extend these pages, by borrowing, and placing before the Society, what is already within their reach; but I cannot leave this subject, without directing their attention to the invaluable observations of Dr. Armstrong, on the symptoms and diagnosis of intestinal affections*.

I shall now proceed to offer the few opinions I have to suggest, regarding the treatment of Alvine Fluxes; I shall not confuse myself, however, by attempting to treat of each of the above species, separately; but shall content myself with making a few general observations, which are only to be considered applicable to the

* See *Lancet*, vols. 5 and 6.

three first forms I have enumerated; and always to the disease, as it appears in the native constitution.

It would be well, at the same time, to recollect the part of the country, in which these remarks have been written; for I have little doubt, that the difference of climate, of diet, and constitution, in the extreme provinces, will make a considerable difference in the applicability of the curative means—nay, I believe, that a difference of season, at the same station, will have a similar effect, in a certain degree. For instance, I conceive Calomel to be less admissible in the cure of this, and of every other disease, towards the close of the rains, and the commencement of the cold weather; indeed in weakly habits, I have more than once known the amount of 5 or 6 grains of Calomel, given in small and repeated doses at this period, occasion sloughing of the gums, and the soft parts of the mouth. It is a trying season for the weak; and the natives are neither by diet, dress, nor domiciliary comforts, well prepared to meet it.

But to proceed. As far as I have observed, there is a degree of abdominal inflammation going on in every case of Alvine Flux: in some cases sub-acute, in others far otherwise.

Although it would not be proper to treat the disease purely on this principle, yet neither ought we to forget it, nor adopt such a plan of treatment, as may increase it.

Of venesection,* I have had no experience, and very

* It is rarely admissible, save in the Acute Dysentery of robust natives. Leeching is however most valuable in all, but the last stages, of the Alvine Fluxes, in this country.—H. H. GOODEVE.

little even of leeching; but I should think the latter is eminently calculated to be of assistance in the treatment of the second and third forms of the disease; the same may be said of the warm bath and mustard poultices. Blisters, plaisters, and woollen bandages to the abdomen, I have had recourse to, but cannot say that I ever observed any essential benefit from their use; they are, besides, exceedingly disagreeable to the patient.

I have seen opium extolled by some, as a noble medicine; and although I am not prepared to say that we could do without it, my own experience prompts me to say, that save in the smallest quantities, in combination with other medicines, it is the most hurtful remedy that can be had recourse to, in this class of diseases; in the form of suppository, however, it may be of considerable service.* With natives, I conceive purgatives to be equally exceptionable; indeed, I have never seen three or four doses of this class of medicines administered, but I have thought less favorably of the patient.

Laxatives of the mildest sort, are far more valuable, but ought, by no means, to be too frequently or unnecessarily repeated. The best laxative, that I am acquainted with in this disease, consists of three drachmas, never more than half an ounce, of Castor

* Injections of Laudanum or watery solution of Opium are invaluable in the obstinate cases of bowel complaint, especially at night to procure rest and sleep, but they must be large, 60 drops of Tinct. Opii, or 3 grains of solid Opium.—II. II. GOODRVE.

Oil, with forty-five or fifty drops of the Tincture of Henbane. This is what I invariably use, and I generally commence the treatment with it. It may be said, that Castor Oil and Laudanum would answer equally well, but this is far from being the case; for though they might operate with nearly as little irritation, the astringent effect of the Opium immediately recurs, and does a great deal of harm. Let the state of the bowels be what it may, the Oil and Henbane will produce feculent evacuation; and I judge its repetition necessary, or otherwise, according to the return of blood, or the absence of feculent matter, in the evacuations. After the first laxative, I consider Ipecacuanha the great sheet anchor; and the exhibition of this remedy I modify, in various ways, from the simplest of three grains of it, with one of Opium, morning and evening, to three grains of Ipecacuanha, half a grain of Opium, three times a day; to three grains Ipecacuanha, two grains Rhubarb, two grains Ext. of Henbane, and half a grain of Opium, three times a day, or even every sixth hour. My common formula is as follows:—

R. Pulv. Ipecacuan. gr. iii.
 , Pulv. Rhæi.
 Ext. Hyosciam. aa gr. i.
 Opii. gr. ss. ft. Pil. ter in dies sumenda.

In short, I increase the quantity of Opium, and diminish the laxative ingredients, as I observe the absence of intestinal inflammation; and on the contrary I diminish the quantity of Opium, and increase that of the laxative ingredients, and the frequency

of administering the medicine, according to the marks of irritation afforded me, by the presence of mucus and blood, and the absence of feculent matter, in the evacuations.

In my opinion, this combination for native patients is superior to that of the *Ipecacuanha* and extract of *Gentian*; this, however, I shall leave to the future experience of other members of the Society, to determine.

In the course of three or four days, should I have occasion to be dissatisfied with the effects of it, and symptoms of considerable intestinal irritation still continue, I omit the *Rhubarb* and extract of *Henbane*, and give as follows:—

R. Pulv. *Ipecac.* gr. iii.

Submur. *Hydr.* gr. i.

Opii gr. ss. ft. *Pil.* ter in dies sumenda.*

The doses of these remedies, and the quantity of *Calomel*, are, of course, to be diminished, and left off as convalescence proceeds. (*a*)

During the whole of this time, the patient's diet ought to be strictly watched; he should be allowed no vegetables; nothing greasy, and nothing in the shape of *Dal*,† of which they are very fond. Nor does milk seem to agree with them, but *Duhee*‡ does; indeed no diet, that I know, answers so well as the

* On more mature reflection, I am inclined to think, that this formula had better be had recourse to from the very commencement in the 3d species.

(*a*) Query? is not *blue pill* better than *Calomel* in this complaint? I have always found it so.†—H. H. GOODEVE.

† *Dal*, a kind of split pea.

‡ *Duhee*, curds.

best rice cooked, (*a*) and mixed with this substance ; it is admirably soothing to the bowels. •

When the disease has assumed a chronic shape, and all traces of inflammation have disappeared, an ounce of Port wine, or an ounce or two of country spirits, three or four times a day, will be of great assistance in restoring health and strength.

I cannot say, that in any species of Diarrhœa, in this country, I have seen much advantage from the chalk mixture ; the following however would appear to be the best formula for it.

R. Cretæ ppr. 3 iii.
 Pulv. Ipecac. Comp. 3 ss.
 Confect. Arom. 3 i.
 Mucil. G. Arab. 3 v. ss.
 Tinct. Cardamom. Comp. 3 iii.
 Tinct. Opii 3 i. ft. Mistura.

Some years ago, when on the Eastern frontier, I thought considerable advantage was derived from a combination of Chalk and Doyer's Powder; and likewise from the free use of milk and lime water; latterly, however, they have appeared to be less successful, and I have accordingly discontinued them.

While in that part of the country, I have likewise occasionally met with complications of intermittent

(*a*) I am inclined to think rice indigestible, and consequently pernicious in all the alvine fluxes of natives, and I have tried it in various forms extensively ; I now invariably restrict the diet of these patients to farinaceous food, sago, arrowroot, or coe munda, with Port Wine in the advanced stages, I believe with excellent effect.

II. H. GOODEVE.

fever, and affections of the bowels; and in these cases, I have sometimes witnessed excellent effects, from a combination of Ipecacuanha, Bark, Ginger, and Opium. —Of the Sulphate of Copper pills, the Alum and Sulphate of Zinc mixture, I have had no experience.

It is not a very uncommon occurrence, for these affections of the bowels, if protracted, to terminate in œdema of the lower extremities. This is an unfavorable, but very far from a fatal symptom. When the state of the bowels is fairly corrected, this must be attended to. A patient in this state, ought to be allowed a generous diet, and six, eight, or ten ounces of Bazar spirits, daily; while some tonic and diuretic medicine is prescribed.

Steel appears to me the best adapted for this purpose; and although the preparations of this medicine do not generally answer well with native constitutions, in the following form, I have seldom had just reason to complain of it.

R. Myrrhæ ʒ ii.
 Ferri Sulph. gr. xxiv.
 Potassæ Subcarb. ʒ i.
 Mucil. Acaciæ ʒ ss.
 Decoct. Glycyrr. fervent. ʒ xiv.
 Tinct. Zinziberis ʒ i.

Myrrhum et Ferri Sulphatem cum Potassæ subcarbonate et mucilage tere donec perfecte commisceantur, dein gradatim adjice decoctum et denique tincturam.

Half an ounce of this mixture may be given, morning and evening, with or without the following pills, at bed time.

R. Pulv. Scillæ gr. iss.
 Pulv. Lyttæ gr. ʒ.
 Subcarb. Sodæ gr. viii.
 Ext. Genjān. q. s. ft. Pil. ii. h. s. s.

Or three or four grains of the spleen powder may be given, twice a day ; or a half of one of the native spleen pills, mentioned before, every morning, with a light tonic during the day.

Under this treatment, the bowels recover their tone ; the general health is improved, and the œdema slowly disappears.

Gyah, 4th July, 1830.

NOTE.—For the chronic bowel complaints of Natives, in every variety of form, combinations of sulphate of copper or acetate of lead with small doses of opium are of great service. The dose of sulphate of copper varies from half a grain to two grains, with a grain of extract of opium or half a grain of muriate of morphia. If the acetate of lead be preferred, the dose given may vary from two to four grains, with the same quantity of opium or morphia as recommended for combination with the sulphate of copper. These pills should be administered every four or six hours according to the severity of the case. Nitrate of silver in doses of half a grain with a grain of opium has sometimes been found very efficient, where the acetate of lead or sulphate of copper has failed. The preference should perhaps be given to sulphate of copper. At first nausea is sometimes produced by this medicine, but in a very short time the patient becomes accustomed to the remedy, and can retain on the stomach two or even three grains without difficulty—we may commence with one grain or even half grain doses. During the administration of these astringents, it is needful occasionally to employ a laxative to remove accumulations from the intestines. Castor oil, Sulphur with carbonate of magnesia in combination, in equal parts of a drachm each, or moderate doses of compound jalap powder may be given for this purpose. The combination of sulphur with magnesia, or with a similar proportion of cream of tartar, is a very mild and agreeable medicine, well calculated to fulfil the object under consideration.

In some cases the Nitro Muriatic Acid given by the mouth in doses of 10 to 20 drops three times daily has been found useful. One

of the best formula for administering this medicine is the following :

R. Acid Nitro-Mur.

Tinct. Opii. aa. ʒ i.

Inf. Columbæ yel. Gentianæ ʒ vi.

An ounce three times daily.

The Nitro-Muriatic Acid bath is an admirable adjuvant in the chronic diarrhœas, and dysenteries of this country, and its utility is by no means confined to cases of bowel complaint complicated with hepatic affections. The bath should be used daily, and requires no peculiar directions, beyond the ordinary arrangements for its administration.

Of all the remedies employed for arresting these harrassing alvine fluxes, and especially in their more advanced stages, the application of Enemata of various kinds appears to be among the most efficacious. These may be formed of solutions of opium alone, or in combination with either of the mineral astringents above alluded to, or we may use the latter without any admixture of opium. For this purpose one of the following formulæ may be employed.

R. Ext. Opii gr. iii.

Aquæ ʒ i.

R. Aluminis ʒ i.

Aquæ ʒ viii.

Tinct. Opii ʒ ss.

R. Cupri. Sulph. ʒ i.

Aquæ ʒ xii.

R. Argent. Nitrat. ʒ i.

Aquæ ʒ xii.

R. Acid Nitro-Mur. ʒ ss.

Aquæ ʒ xii.

R. Plumbi Acet.

Tinct. Opii aa. ʒ i.

Aquæ ʒ viii. misce.

The pure opium solution is of great value in almost every variety of the disease. By its administration we can often succeed in procuring relief from pain, and giving the patient a comfortable night, which nothing else can obtain for him. Opium administered in this way does

not disorder the stomach, as it does when given by the mouth, while it is almost equally efficacious in alleviating the distressing symptoms of dysentery and diarrhœa.

Of the astringent injections the nitrate of silver is perhaps the most potent, but the article is expensive, and cannot always be procured in sufficient quantity. The quantities prescribed in the above formulæ may be varied, and it is frequently necessary to encrease the strength of the solution to 10 or 12 grains to the ounce of water. The best substitute for the nitrate of silver is the sulphate of copper; for administering this an ivory or a brass syringe should be employed, for in a pewter instrument, the lead decomposes the copper salt. The sugar of lead enema is often desirable, when much tenesmus and irritation about the rectum exists.

In administering these astringent enemata, the object is to wash over as large a portion of the lining membrane of the large intestine as may be reached. They should therefore be thrown as high up into the colon as possible, unless there should be positive indication, that the disease is confined to the rectum. They operate on the diseased surfaces within the intestines as similar applications do upon ulcerated or inflamed parts external to the body. Once, or at most twice daily are often enough for the application of these remedies, but in employing the sugar of lead or opium injection, we must be guided by the necessity of the case, and employ them every 4, 6 or 8 hours, as the case may be, since the object in using them is chiefly the alleviation of immediate suffering.

II. H. GOODEVE.

CHAPTER XI.

Of the Land Scurvy of the Natives.

I REGRET, that I have not time, to throw my thoughts together in a more regular form, in the present letter, but after reading Dr. Burt's short paper on Land Scurvy, among the natives, contained in the 4th volume of their Transactions, it appears to me, that the following case and observations may not be altogether uninteresting to the Society.*

The case occurred in one of the Sepoys of the 7th Regiment N. I., while that corps was employed in Cachar in 1825.

He was about 18 years of age, of a full, plump habit of body, very dark complexion; and apparently of indolent habits. He was admitted into Hospital on the 1st of November 1825, in consequence of an apparently rheumatic affection of the muscles forming the calf of the left leg. The part was swollen, hard, and glossy, and felt as if the whole muscles of the part were agglutinated together, by an effusion of coagulable lymph. It was very painful, especially on pressure, and prevented free extension of the

* Originally addressed in the form of a letter to the Medical and Physical Society of Calcutta, and published in Vol. VII. Part II. of their Transactions.

leg. The joint of the opposite knee was likewise in some degree swelled, and painful; the pulse was very frequent, but weak, the skin hot and dry, and if I recollect rightly, the tongue was of a dead white, and bloodless colour. He was ordered five grains of calomel with a few grains of antimonial powder, at bed-time, to be followed up by a solution of salts with antimonial wine, in the morning.

Next day, I was surprised to observe the face apparently more full and puffy than usual, particularly on one side; on inquiry, I found that his gums had been spongy, and his teeth loose, for some time previous to his admission into Hospital. His gums bled profusely on using the slightest liberty with them, and there was a discharge of ill-conditioned matter, from between them and the teeth.

He had used no mercury previous to admission, and none was given to him, after the first dose.

This was the first case of the sort I had witnessed. In the commencement, it was treated as one of acute rheumatism, and afterwards when it assumed a more chronic form, guaiac, bark, quinine, &c. were tried, but without the slightest benefit. Although combined with opium, they generally affected the bowels, which were inclined to be irritable.

Oil of turpentine was next had recourse to, and under it, the state of the bowels considerably improved; the stools, though still more frequent than natural, becoming formed, and not unlike rolls of chalky sulphur.

The symptoms were now suspected to be of a scorbutic nature, and lime-juice, and a solution of

nitrate of potass in vinegar were administered to him; and as he had hitherto lived on a low vegetable diet, fresh animal food and milk were enjoined, and made use of, but without any advantage. The stomach became weaker, and rejected its contents, although he ate but sparingly.

Latterly, the calf of the leg was less swelled, but the knee of that side had become involved in the disease: the opposite one remained as before, but both were now in some degree contracted, and the ends of the bones forming them, appeared to have become enlarged.

He remained in this state (very little reduced in flesh) till the 20th of January. In the morning's visit of that day, I observed that his respiration was much hurried, the expression of the eye and countenance was wild and anxious, and the pulse thready and running. These symptoms continued to increase till 11 o'clock A. M. when he died.

With great difficulty, I obtained permission of his relations to examine the body, and in consequence of their anxiety and importunities to remove it, I was obliged to proceed to the examination at 1 o'clock P. M.

In laying open the abdomen, the integuments over the muscles and the omentum were found loaded with quantities of yellow fat. The liver was much enlarged, and of a dark colour. It appeared almost, as if it had been macerated for several days; its substance could be readily broken down between the finger and thumb, and the investing membrane from the peritoneum was in some places whitish, and could be readily stripped off from its parenchyma. It had

likewise formed a few adhesions to the diaphragm, and the parietes of the abdomen. The gall-bladder contained about three ounces, of an extremely dark, viscid, and ropy bile.

On opening the thorax, the pericardium was found to contain about two ounces of a clear liquid, which was carefully removed with a sponge, into a glass measure, and in a short time, in removing it from the glass, it was found to have acquired the consistence of jelly. The heart was of a pale colour; nothing remarkable was observed about its left ventricle; but on cutting into the auricle, it was found filled with a substance, something between the consistence of a polypus, and the gelatinous buff of inflammatory blood. The right ventricle was pale and flabby, and unusually thin in its parietes; it was filled with a substance similar to that found in the left auricle, which was so tenacious, that it could with difficulty be torn from among the columnæ carneæ. The right auricle was filled with a similar substance, which perfectly retained its shape, after being removed.

Generally the anatomical structure of the heart was uncommonly distinct, particularly the remains of the foramen ovale.

The left lung was apparently healthy; the right however was of a florid red, and adhered throughout the whole of its contiguity, to the walls of the thorax, and likewise to the diaphragm, insomuch that it could with difficulty be separated, even by force. The blood, which was effused, in removing the heart, coagulated in the thorax, which I am

unable to account for, unless it arose, from the short period, which intervened between death, and the examination of the body; and yet I have not been able to find any confirmation of this opinion, in my notes of Mr. Hewson's work on the blood.

I regret to say, that the same cause, which hurried on the examination of the body; viz. the impatience and importunities of the relations, prevented me from examining either the parts affected, the intestines, or the contents of the cranium.

In Cachar I have seen several other cases of a similar nature; but in which the symptoms were much less acutely marked.

In some, I have seen the lower extremities affected, considerable swellings forming about the knee, or under it, not very unlike venereal nodes, though of a much larger size, and of a more diffused, fleshy, and puffy feel; while in others, an upper extremity has been affected, a similar swelling forming about the elbow joint.

In either cases, if the mouth be examined, the gums will be found tumid, and separating from the teeth, and as the disease advances, a foetid matter is discharged from between them, the teeth become clogged with sordes, the gums bleed on the slightest occasion, and finally their interstitial divisions shoot up into large fleshy prominences, and the teeth drop out, as if forcibly ejected from their sockets.

While these symptoms are going forward, there is generally a degree of low fever, the tongue is of a

dead white and bloodless hue, and the countenance has much of the lurid appearance, which attends affections of the spleen; and if I mistake not, this state is intimately connected with that singular and peculiar disease of the natives "the burning of the feet."

Dr. Burt thinks, this disease principally arises from poorness of living, and moisture. It probably does so, and yet I have seen some mild cases of it at Gyah, where the air and soil are remarkable dry.

Dr. Burt farther remarks, that the sluggish and indolent are particularly liable to attacks of this disease; but it may fairly be a question, if they are not so, to every other disease of debility.

The last case, I had occasion to treat, I was inclined to attribute, in some degree, to an habitual use of opium; and it is probable that this, or any other cause, which destroys nervous power, producing sluggishness and indolence, and thus obstructing the free action of the Chylopoietic viscera, would produce a similar effect.

In the treatment of this singular and often very fatal disease, lime juice with or without wine, the vegetable bitters* with the mineral acids, quinine

* As connected with this subject, the whole of Dr. Paris's Chapter on Tonics in his Pharmacologia is highly interesting; I shall however confine myself to a few quotations, which seem more particularly germane to the subject under consideration.

"There would seem to be certain substances, that act as specific stimuli upon the living fibre, and are in certain cases indispensable for the maintenance of its healthy tone; such are vegetable bitters, which produce a powerful effect upon the digestive organs, and by nervous

and chalybeates will probably be found the most useful—with an occasional small dose of Twining's spleen mixture, where a laxative may be indicated. A moderate use of bazar spirits has certainly appear-

sympathy, upon the rest of the system. *Bitter Extractive*, seems to be as essential to the digestion of herbivorous, as salt is to that of carnivorous animals; it acts as a natural stimulant, for it has been shewn by a variety of experiments, that it passes through the body, without suffering any diminution in its quantity, or change in its nature. No cattle will thrive upon grasses, which do not contain a portion of this vegetable principle; this fact has been most satisfactorily proved by the late researches of Mr. Sinclair, gardener to the Duke of Bedford, which are recorded in that magnificent work, the "*HORTUS GRAMINEUS WOBURNENSIS*." They shew, that if sheep are fed on *Yellow Turnips*, which contain little or no bitter principle, they instinctively seek for, and greedily devour any provender which may contain it, and that if they cannot so obtain it, they become diseased and die. We are ourselves conscious of the invigorating effects of slight bitters upon our stomach; and their presence in malt liquors not only tends to diminish the noxious effects of such potations, by counteracting the indirect debility which they are liable to occasion, but even to render them, when taken in moderation, promoters of digestion. * * * *
With regard to the natural use of *Bitter Extractive*, it may be laid down as a truth, that it stimulates the stomach,—corrects putrefying and unwholesome nutriment,—promotes tardy digestion,—increases the nutritive powers of those vegetable substances, to which it is united, and furnishes a natural remedy for the deranged functions of the stomach in particular, and through the sympathetic medium of that organ, for the atony of remote parts in general; and it shall hereafter shew, that in its medicinal applications, it certainly imparts additional activity to many remedies, while it renders the stomach and system more susceptible of their salutary energies. As an essential ingredient in the provender of herbivorous animals, it may I think be admitted as a fact, that its importance is in an inverse ratio with the nutritive powers of

ed to me beneficial, and I am inclined to think that an allowance of beer or porter would prove still more so.

These are rather expensive articles in India for use in Jail Hospitals, and as a subacid vegetable juice in a state of fermentation, it is not impossible that palm wine might be found useful, and if so would be found available, at almost every station in the lower provinces. Lime juice, oranges and the acetic solution

the food. * * * * Gummy matter, which seems to result from the first change of the sap, is undoubtedly rendered more digestible and nutritive by the presence of a bitter; pure gum is not very much disposed to yield to the assimilative functions; "it frequently passes through the bowels," says Dr. Chapman, "very little changed, as I have witnessed a thousand times." We see therefore the value of the bitter principle, in the economy of the *Lichen Islandicus*, which is intended as the food of animals in northern latitudes; we are told that boiled linseed constituted the sole diet of the people of Zealand during a scarcity of long continuance, on which occasion, symptoms of great debility occurred, attended with those of dyspepsia; so again Professor Fritze, in his Medical Annals, states that vegetable mucilage, when used as a principal article of diet, relaxes the organs of digestion, and produces a viscid slimy mucus, and a morbid action in the primæ viæ, an effect which analogy shews might be obviated by the addition of bitter extractive. For the same reason animals that feed in marshy lands, on food containing but little nourishment, are best defended from the diseases they are liable to contract in such situations, by the ingestion of bitter plants. Thus it has been found by experiments, that the *Menyanthes Trifoliata*, (the Water Trefoil,) which on account of its bitterness has been used as a substitute for Hops, is a cure for the rot in sheep, when given in doses of a drachm of the powdered leaves; and Dr. William Bulcyn, the cotemporary of Turner, the father of English Botany, observes in his work, entitled "THE BULWARK OF DEFENCE," that *Tormentil*, in pastures, prevents the rot in sheep."

of nitre may answer very well with the *dura ilia* of Europeans; but I suspect, they will not be found to improve the state of a Native's bowels in this disease: and if a diarrhœa be once fairly established, it will be no difficult matter to prognosticate the result of the case.

While these remedies are being employed for the improvement of the general health, we ought not to forget, that comfortable lodging and clothing, free ventilation, *regular exercise*, and a generous diet will be our best auxiliaries; nor ought we to omit the use of acid and astringent gargles, and other topical applications, that may be indicated.

While on the subject of local applications, and connected as I believe the two diseases to be, it may not be foreign to the subject to remark, that in cases of burning of the feet, I have seen some advantage derived from the native unguent recommended by Dr. Playfair, and that I have never seen the slightest benefit derived from any other application whatsoever.

In laying these observations before my professional brethren, I wish it to be distinctly understood, that the mode of treatment laid down, is recommended more as that likely to succeed, than as having actually been attended with unusual success. In any disease, which is not of frequent occurrence, it will generally be some time, before the best mode of treatment can be laid down with accuracy. The present one, if I am not mistaken, will not be found particularly tractable, especially where the patient remains exposed to the influence of its exciting causes, and perhaps in most cases *a timely change to*

a more favorable climate would be more beneficial, than any course of medicine, we could prescribe, and this happily can almost in every instance be obtained, by encamping the sick so affected, in some favorable locality, in the vicinity.

NOTE.—The only matters which it appears to me you might add to it are—The *saline* treatment and a more decided, insisting upon *change of air*, which latter I ever found by far the most efficacious remedy, and I had an opportunity of seeing a good deal of this disease at Midnapore, both in the jail and among the 24th Soldiers, who had been for some time in the Chota Nagpore Jungles. The *saline* treatment is a very curious refutation of the old idea of salt being the principal cause of the disease at sea. The fact is, that it was not the *salt* meat, which produced the complaint but the inefficient nourishment afforded by the provisions, and the bad air in which the people were kept, in ill-ventilated holds. Causes by which the vital energies were depressed, and in lieu of the requisite chemical changes being affected, for building up the tissues with solid and wholesome material, a species of putrefaction and decomposition were induced, similar to the effects of malaria in producing Typhus fever and the like. The late researches of Liebig and others, in animal chemistry, and the application of their discoveries to physiology and pathology, have thrown much light on this subject. How the saline treatment acts I cannot exactly say, whether by affording a better supply of oxygen or whatever it is, but the good effects of the treatment are indisputable in many cases. I quite agree with you in the administration of tonics; as in the shape of spleen mixture, but perhaps a more decided use of quinine and iron would be better, say three grains each of quinine and sulphate of iron, two or three times daily, with the same quantity of rhubarb, but it is not desirable to purge much, and Twining's formula I have generally found too aperient for Natives, sometimes inducing a most troublesome diarrhœa.

H. H. GOODEVE.

CHAPTER XII.

Of the treatment of Cholera Asphyxia, particularly as it affects the Native Constitution.

IN the present Chapter, I propose to offer a few observations on the treatment of Cholera Morbus. The importance of the subject few will dispute, and I trust that the value of the information, which the labours of others, and the kindness of friends enable me to lay before the Society*, on the present occasion, will form an ample apology for my again trespassing on their time.

In a former communication I endeavoured to prove, that Cholera is but a species of asphyxia, in which though oxygen, and (it may be) some of the other constituents of the atmosphere are supplied in abundance to the lungs, they are incapable of appropriating them in the usual quantities for the purposes of life. In so far as I have observed, there is nothing in the mode of treatment, which has been found most successful in the disease at all incompatible with such a supposition; in a matter however of so grave a nature, we must put aside entirely all speculative opinions, and confine ourselves, as much as

* This communication, like the others, was written for the Medical and Physical Society of Calcutta, but never laid before them; for further information regarding it, refer to the 98th and several succeeding pages.

its nature will permit, to mere matter of fact, and the lights which experience has thrown on the subject.

In pursuing the investigation guided by these principles, I shall not attempt to give any thing like a systematic account of the treatment of Cholera Morbus; but shall confine myself to the observations which my own experience has enabled me to make, except indeed where I avail myself of the use of unpublished documents, with which the members of the Society are probably unacquainted. To have adopted an opposite course, and presented to them a compilation of opinions, with which they have long been conversant, would have been to make a sorry use of the two short hours in the month, devoted to their meetings.

Inconsistent and contradictory as the practice recommended in these pages may appear, it will notwithstanding be found conducive to the following ends, which, as far as I can judge, are in no respect incompatible with each other, viz. To promote arterial circulation; to relieve venous congestion; to preserve sensorial and nervous power; to restore the functions of the decarbonising organs, and lastly to moderate the discharges. Premising then, that my own experience has been principally acquired in Native Hospitals, I proceed to the consideration of the principal remedies exhibited in Cholera Asphyxia.

Of Blood-letting.—Of these, none is perhaps of more paramount importance than blood-letting; and yet it is but fair to confess, that I have not uniformly employed it; the fact is, that in virulent diseases like Cholera, a portion of those affected will die under

any mode of treatment, and in the midst of agitation and alarm, until after great experience, we are too apt to fly from remedy to remedy, in the hope of discovering some one, that will prove more successful than that, we have been using.

The testimony of almost every Medical Officer, who has written on the subject, is in favour of venesection; some, it is true, have observed, that different epidemic visitations of the disease are marked by peculiarities, (which is undoubtedly the case,) and have hence been led to infer, that the remedies most appropriate may likewise vary. If I am not mistaken, Dr. Mouat, in his account of the epidemic which attacked His Majesty's 14th Regiment of Foot at Berhampore, has supported opinions* of this nature, more particularly in respect to venesection. I confess, that I have not uniformly had recourse to it myself, and that I have not on some occasions been without misgivings, in respect to the benefit which

* That gentleman remarks, "In former attacks of Cholera, venesection I ever found the most speedy and efficacious remedy with Europeans; and when properly timed the flow of blood has relieved the vomiting, the spasms, the restlessness, and jactitation with the great majority. Venesection in the present instance has destroyed the powers of life, sunk the patients, and induced spasms and cold sweats; so that, when the pulse was languid, skin clammy, voice feeble or changed, countenance distressed or shrunk, heat below the natural standard, we have been obliged to refrain from bleeding."

I have examined the schedule of cases treated by Dr. Mouat, and strange though it may appear, the result does not warrant the conclusion which the Doctor has arrived at. Of ninety-four cases treated, twenty terminated fatally, while of forty-eight, who were bled, only six died.

resulted from it, when I have ; on more mature reflection, however, I am inclined to attribute these doubts to the *Experientia Fallax*, and to consider, that from the very nature of the disease, venesection must be as beneficial in one type as in another. It would at the same time be both unfair and unphilosophical, not to admit, that conclusions drawn from experience, erroneous though they may subsequently prove to be, are entitled to far greater weight, than mere abstract speculations, however plausible in appearance.

The effect of blood-letting in some cases of Cholera is so instantaneous, that it would be difficult to account for it, in any other manner, than by supposing it to act, (almost mechanically,) on a disordered state of the circulation, such as I have endeavoured to show exists in this disease. In other instances, in which its effects are perhaps less striking, it would still appear to be productive of the most beneficial results, by enabling the patient to maintain a protracted struggle ; and this it does by adapting the column of blood to be circulated to the diminished energies of the heart, and by obviating the apoplectic engorgement of the sensorium, which never fails to ensue in protracted cases. This in its turn becomes a link in the morbid chain, re-acting on the functions of the heart and lungs, and essentially diminishing the chances of a favorable termination. To me it appears impossible to account for the instantaneous salutary effect above-mentioned, either on the principle of the disease consisting of an inflammation of the stomach, an affection of the great

sympathetic nerve, or on any other hypothesis except the one I have hazarded; and were Dr. Kennedy's theory of its being a concussion of the brain well founded, we would more naturally expect copious venesection to extinguish the feeble remaining spark of life, than to relume it. In other species of asphyxia it appears to be practised principally with the view of relieving local congestion, and to me it does not appear, that its use in Cholera forms any exception to the general rule. The best proof of that object having been attained, in the present instance, will be the free flow of the blood, and its return to a more natural and florid color. With regard to the particular stages, in which venesection would appear to be more particularly indicated, it seems superfluous to remark, that our hope from it, as well as from every other remedy, must be in proportion to the promptitude, with which it is had recourse to; this is more particularly the case in regard to blood-letting, for if not practised in the commencement of the disease, the opportunity most probably will be lost for ever, the blood refusing to flow, notwithstanding every solicitation to the contrary. On any other consideration, the remedy appears unexceptionable, at any period of the disease: the depression of the powers of life is in a great measure apparent, depending on oppression at the source of the circulation: towards the conclusion, the exhaustion is no doubt more real; but in these protracted cases the blood will not flow, and after all, perhaps no better general rule can be laid down, than to bleed in every instance in which

the blood will flow, and to persevere, until it assume a more florid, and natural appearance*.

Of Leeching and Cupping.—Some have recommended the application of leeches, both where venesection can be practised, and where it cannot. The practice may be beneficial occasionally when blood is obtained; but in so far as I have observed, in severe or protracted cases of Cholera, leeches are very reluctant to bite, and generally no sooner taste blood, than they crumple up and roll off, as if poisoned. This objection cannot of course hold good with respect to cupping, but whether there is any difficulty in drawing blood in that manner, I am not prepared to say: at any rate, neither leeching nor cupping can *a priori* be expected to produce the same favorable results, as when by venesection we operate directly on the circulation, and that too, on the very portion of it most encumbered. It must be supererogatory to remind the reader, that the object of venesection in this disease is to free the circulation; to strengthen and not to weaken it; to remove congestion about the heart, and not to increase it; and that to effect these objects we ought to be most careful not to induce syncopé, never bleeding our patients, save in the recumbent posture, and

* The result of Dr. Cheek's experience, which will be found in a subsequent part of this essay, perfectly accords with these doctrines. Of a total of 103 cases treated by him, 42 terminated fatally; while of 69 cases bled, only 19 died, of whom from one, six ounces were obtained, from another four ounces, and from all the rest even less than that quantity.

never failing to tie up the arm, on any symptom of its approach. Where the operation has not been attended with success, we need not hesitate to have recourse to it again.

Other morbid states requiring venesection occasionally arise in the course of Cholera Asphyxia, which do not however form an essential portion of the disease. In protracted cases, the breathing occasionally becomes difficult and stertorous, from congestion of the lungs; this may be followed by re-action throughout the system: and though in general, the circulation is capable of overcoming the obstruction, in some instances, if relief be not timeously afforded by the abstraction of blood, the patient will be lost. Again, re-action in Cholera, whether from the quantity of opium taken, or from the effect of undecarbonised blood on the brain, is occasionally followed by coma and stupor; and the patient will infallibly perish, unless relieved by the means most appropriate in the treatment of apoplectic affections. The following history of a case in which both these states appear to have been present, at the same time, is so interesting, that I have extracted it from Mr. Hamilton Bell's valuable little work on Cholera. The abdominal and other viscera are liable to be similarly affected.

*“ Private Thomas Layton, 19th Regiment, Æt. 22.
Three years in Ceylon.*

“ Had not previously suffered from disease. When
“ admitted into hospital, labouring under Epidemic
“ Cholera, says, he has been affected with slight loose-

ness for the last two days ; at present, 10 o'clock
 A. M., 14th August, (1819,) complains of head-ache,
 vertigo, and faintness, with violent vomiting and
 purging of watery fluid ; the features are shrunk,
 and expressive of great anxiety ; pulse small and
 intermitting, profuse perspiration, skin moderately
 hot, tongue clean ; has had some spasmodic
 twitches in the fingers and toes. Although, the
 state of collapse was fast coming on, I still con-
 sidered, that the circulation might be relieved by
 venesection : lb. iss. of blood was abstracted from
 two orifices before it ceased to flow. He was in-
 stantly placed on a spirituous vapour bath, took
 hydrargyri submuriatis gr. xxx. powder, and seve-
 ral stimulant anti-spasmodic draughts, the second
 of which was combined with Tinct. Opii. 3 i.

At 12 o'clock, the vomiting and purging still
 continued: took another dose of hydr. submur.
 gr. xxx.; had his abdomen fomented and rub-
 bed with Ol. terebinthinæ. His head was also
 shaved, which, together with his legs and arms, was
 rubbed with a liniment composed of antimonii
 tartras and ol. commune. At this time, the state
 of collapse was completely formed ; he tossed his
 body and limbs to and fro, on the couch ; the
 vomiting and purging was now relieved, but cold
 clammy sweats continued, with spasms in the ex-
 tremities, for the space of ten hours, during which
 time blisters were applied to the head and thorax ;
 he was kept warm by the vapour bath ; had repeat-
 ed stimulant glysters, and his limbs rubbed with
 various strong embrocations.

" *August 15th, 10 o'Clock P. M.*—Was still in a
 " cold perspiration; *continued perfectly collected;*
 " pulse began to flutter, and both blisters had vesi-
 " cated. From this period the pulse gradually rose,
 " and by eight o'clock next morning the skin was
 " moderately hot; pulse slow and steady; had not
 " had a natural evacuation,

R. Pulv. Rhei ℥ ii.
 Aquæ Cinnam. ℥ ii.

" *Vespere.*—Had not had a stool, but had *made*
 " *water several times*, and slept two hours; is extreme-
 " ly exhausted and torpid; was allowed some wine,
 " and such food as he fancied.

R. Enema Purgan.

" *August 16th.*—Is still in a state of torpor and
 " listlessness; pulse steady; no appetite. The enema
 " brought away some *ætid stools*.

R. Hydrarg. Submur. gr. x. ter in die.
 Repet. Enema cathart.

" *August 17th.*—The stupor and *insanity*, with
 " obstinate costiveness, continue; he also complained
 " of pain and fulness of the left side, with oppression
 " of the breathing. Thirty leeches were applied to
 " the thorax, and four full doses of cathartic pills
 " were administered, which produced some bilious
 " stools; pulse and heat natural.

" *August 18th.*—The stupor and *catching in breath-*
 " *ing* having increased, he was put into a warm bath;
 " the former blister being healed, another was applied
 " to the thorax, and the catharsis kept up by a cor-
 " dial rhubarb mixture."

The case goes on till the 22nd August, symptoms and treatment continuing much the same, on which day this is the report:—"Breathing more oppressed; *pulse still regular*; has not had a stool from the medicine.

R. *Energia Purgan.*

c. *Ol. Terebinthin.* ʒ ii.

Vespere.—Low muttering delirium came on during this day. He gradually sank, and died about three o'clock on the 23rd instant.

Sectio Cadaveris, Five Hours after Death.

On taking off the skull-cap nothing unnatural appeared on the surface of the dura mater, excepting a number of veins running over it much distended with blood. A great proportion of the veins likewise on the surface of the brain were highly turgescēt, and some of the smaller branches contained portions of air intermixed with blood. The cortical and medullary parts of the brain were natural in appearance and consistence, except the latter exhibiting, when cut across, numerous bloody points. The right lateral ventricle contained about two drachms of serous fluid, the left about one and a half drachms. The pineal gland was very firm in consistence, but natural in colour; there was nothing remarkable about the other parts of the encephalon; there was about half an ounce of serum slightly tinged, in the base of the brain. The medulla spinalis was so firm in texture, as to approach to the consistence of ligament; the vertebral canal could not be examined in a manner sufficiently satisfactory, for want of proper instruments; and the only circumstance which I was capable of noting, was part of the serous

fluid oozing out, which no doubt ran along the sheath lining the canal from the base of the brain*," The appearances of the chest and abdomen are given. In the former there was evidence of the existence of inflammatory action; in the latter, the viscera had the usual character of disordered circulation, consequent on a partial recovery from Cholera.

To those conversant with the treatment of Cholera Asphyxia a doubt will probably occur, if a moderate abstraction of blood, and other means of depletion, had recourse to about the 16th or 17th, might not have been the means of preserving life in this instance.

Of Blisters.—From vesicatories applied to the region of the stomach I cannot say, that I have known much advantage to be derived: they usually occasion considerable pain and irritation, and add greatly to the sufferings of the patient. When applied early in the disease, while the skin is yet warm; they occasionally appear to be of service in allaying the irritation of the stomach, and in promoting the cure; but it is to be recollected, that such cases are either of the mildest character, or are met with under the most favourable circumstances; where the case is seen in a more advanced stage, and the vital powers on the surface have become impaired, it is useless to apply them, for they never rise; they may detach the cuticle, but occasion no discharge; and in that event, I have never known them to be productive of the slightest advantage. When it is

* Ceylon MS. Reports.

determined to apply them, the surface should be prepared for their reception by frictions with equal parts of the Emplastrum Lyttæ, and Oleum Terebinthinæ. Sinapisms applied to the region of the stomach are more highly spoken of, by those who have employed them. From blistering along the course of the spine, it appears to me, that I have derived far more advantage, in so much, that latterly I have never neglected to have recourse to it, in any case, that threatened to become dangerous. It occasions no great trouble either to the patient or the practitioner. A mixture consisting of equal parts of Emplastrum Lyttæ, Oleum Terebinthinæ, and Unguentum Hydrargyri is to be rubbed into the spine, about two inches broad, throughout its whole length, for about half an hour; and if this does not prove sufficient, the operation may be repeated in a couple of hours, and will seldom fail to produce vesication.* The advantage derived in this instance, and I hold it to be unequivocal, is probably to be attributed to the stimulus of the blister acting on the sensorium and spinal marrow, and maintaining or exciting their energies after they have become oppressed and congested with venous blood.

Of Opium.—Opium is perhaps the medicine that of all others has been most invariably administered in Cholera, and yet I confess I entertain considerable doubt of the propriety or advantage, with which it is

* The more modern, and more rapid mode of producing vesication by means of the Liquor Lyttæ would probably supersede this, with advantage.

exhibited in certain stages of the disease. In the first onset, I grant that I know no medicine, that can be given with a greater prospect of success, particularly if combined with a stimulant. The precise dose, in which it should be given to an adult, may admit of a variety of opinion; and no doubt, it will vary under the circumstances of each particular case. In general, at the commencement, I have been in the habit of giving a drachm of the tincture, with as much of some diffusible stimulus, the *Spiritus Ammoniae Aromaticus* for example: some are in the habit of giving much larger doses, and of repeating them too; but I am not aware that their success has been greater than that which has attended those, who prescribe the medicine in more moderate quantities. The natives generally administer it in doses considerably smaller than we do, and repeat them more seldom; and yet, if their reports are to be credited, their success is greater than that which attends our hospital practice.

In one of the accounts of the Russian Cholera, it is mentioned; that the mortality among the troops was proportionally greater than among the peasantry; if this be true, the fact is singular, and can in my opinion only be accounted for by the latter being treated more on the *Medicine expectante* than the soldiery; and perhaps in no respect does this observation hold so true, as in regard to the administration of opium.

When the patient is first seen, probably no single medicine can be given with an equal prospect of success; and perhaps this is equally true in regard to its use for the first two or three hours, should

there be occasion to continue it; for if the circulation rally under its use, or sleep be induced, in a great chance, the case will terminate successfully; on the contrary, however, if its administration to a fair extent have been followed by no marked improvement, and the breathing have commenced to be difficult, far less laborious, every additional dose of this medicine will be highly prejudicial; as the disease advances, the contents of the cranium become gorged with undecarbonised blood, and every medicine, which has a tendency to encrease that state, can only act as fuel to the flame. With equal propriety might we administer it in apoplexy. I say this advisedly, for I have stood by, more than once, and deliberately observed the stertor and difficulty of breathing increase with every dose of opium. The same remark, I am inclined to think, holds equally true in respect to vinous stimulants, which possess the additional disadvantage of being neither grateful nor congenial to the stomach in this disease.*

Occasionally opium will appear to be completely successful in checking the vomiting and purging, the spasms may be trifling or altogether absent, and yet the patient continue to sink with redoubled speed. This is neither an imaginary nor an uncommon case, indeed I have known an epidemic marked by these characters; it is one, however, which requires a pecu-

* In ninety-four cases treated by Dr. Mouat, twenty died, while of thirty-two who had Brandy or vinous stimulants, nineteen died. I am aware that this is no legitimate deduction; yet still the fact is worthy of

liarity of treatment: under such circumstances opium is not indicated, and it would be folly to persevere in its use. It must be admitted, that cases of the sort are pregnant with danger in whatever manner treated; but perhaps the wisest course to adopt, is to restore the discharges without delay, and the operation of an emetic offers the best prospect of effecting that object. These observations are not intended in any way to apply to minute doses of opium, given at considerable intervals in combination with Calomel, or any other medicine, with the view of stimulating the powers of life, without incurring the risk of overpowering them.

Of Stimulants.—Medicines purely stimulant, that is partaking in no respect of narcotic qualities, may be had recourse to, in my opinion, throughout the disease, with advantage; indeed in protracted cases, they are the only remedies almost, with the exception of small doses of Calomel, on which we can place any reliance. The essential oils are in universal use, and one is perhaps nearly as efficacious as another; ammoniated Tincture of Valerian has been used, as well as the Tincture of Cantharides, and both with supposed advantage; the principal however of this class of medicines are the different preparations of ammonia. The following is the mode, in which I usually prescribe it, where the object is merely to support the patient's strength through a protracted struggle.

R. Camphor. .
Carbon. Ammon. aa. ʒ ss;
Aquæ ʒ viii.
Spt. Æther Nitros. ʒ ss.
℞t. mistura cujus statat Æger ʒ i, omni quaque hora.

When re-action has commenced, a bitter infusion like the following, may often be substituted with advantage.

R. Pulv. Radic. Calumbæ.

Zingib. aa ʒ i.

Aquæ Bullient. ʒ viii.

Infunde pr. horam dein cola et adde Tinct. Cardamom.

c ʒ i. sumat Æger ʒ ii. secundis horis.

Ammonia is however occasionally employed, not merely as an auxiliary, but as a principal in the treatment of Cholera Asphyxia. My own experience of its exhibition on these principles has not been great. In perusing the report on Cholera, issued by the Medical Board of this Presidency, I was struck with the advantage, which seemed to have attended its use, in the instance of Poorum Sook, a Sepoy, whose case forms the 30th of the Appendix to that work. I had occasionally afterwards used the medicine in reduced doses, with a degree of success, to induce me to make farther trial of it: this I accordingly did, in the following instance:

A domestic of my own, of Herculean figure for a native, was seized with Cholera in July, 1826, while I was passing Barrackpore in charge of a wing of the 22nd Regiment Native Infantry, in which Cholera then prevailed. The man took Calomel and opium without advantage. He was bled to twelve ounces, fainted, and apparently afterwards got rapidly worse. The labour in respiration was great, and indeed all were convinced, that death was rapidly approaching, nay that it was near at hand. In this state, two

drachms of the *Liquor Ammoniaë* were given, in a mucilaginous vehicle, and repeated every half hour. The patient soon showed symptoms of amendment under this treatment, but ere the medicine was left off, he had taken from my own hands, in the course of four hours and a half, nine doses of two drachms each, or two ounces and two drachms of *Liquor Ammoniaë*. The medicine, it is true, may have been old and weak, yet still the quantity is enormous. The patient did not afterwards recover rapidly, but on the contrary, was nearly a week before he could leave the boat. It is natural to suppose, after the decided good effects of the medicine in this instance, that I must again have had recourse to it, in other cases; I cannot however recall to my recollection any instance, in which I did so with very striking effect: others however have administered it extensively, and apparently with the greatest success. Dr. Ludlow, the Superintending Surgeon of the Neemuch circle, in a letter to my address, describes the success which attended its administration, in the hands of Mr. Assistant Surgeon Mottley, in an epidemic which prevailed at Ajmere, in September, 1831, in the following terms: "I regret to state, for the information of the Board, that the Cholera made its appearance at Ajmere early in this month. A number of people have fallen victims to it, but Sub-Conductor Digges, of the magazine, is the only European amongst the number.

Mr. Mottley, the civil surgeon at Ajmere, reports, that 'from the 5th to the 22nd of the month, 165 persons had taken the *Liquor Ammoniaë* and reco-

vered: 68 had died of Cholera, but out of this number six only had taken *Liquor Ammoniaë*. Mr. Mottley has not only given this medicine with much success, but Captain Dixon of the Magazine, and the Cotwal of the city, who were furnished with the remedy, found it likewise beneficial.

The *Liquor Ammoniaë* is given as soon as possible after the attack, in a dose of two or three drachms in a wine glass of water, and repeated, if necessary; the subsequent treatment is Calomel and Extract of Colocynth, until the congee-looking inodorous stools are followed by dark and offensive motions. This seems to me a judicious treatment of Cholera, and I am happy in having it in my power, farther to report to the Medical Board my approbation of Mr. Mottley's professional zeal and attention, on this occasion."

Mr. Steart, the Assistant Surgeon attached to the Political Agency at Mundlaiser, has likewise exhibited the *Liquor Ammoniaë*, with more than ordinary success. He is in the habit of prescribing it in doses of thirty drops, or half a drachm, repeated every five, ten, or fifteen minutes, until re-action has commenced, Mr. Steart is at the same time a warm advocate for bleeding. The average quantity which he found it necessary to abstract, was seven ounces; and he remarks, that those, who were not bled, recovered more slowly, than those who were.

Of Calomel.—Calomel is one of the remedies next in importance, in the treatment of Cholera, or, if not in importance, at least in the frequency with which it is administered. When the irritability of the stomach

has been allayed, I have been in the habit of administering it in moderate doses, from time to time, and perhaps rather with advantage than otherwise. I have likewise administered it in scruple doses, repeated occasionally; I cannot say, however, with any perceptible advantage; on the contrary, it seemed to me to depress the powers of life, and to hasten on those drenching cold colliquative sweats, than which there is scarcely a more unfavorable symptom in the disease. It is generally supposed, that small doses of Calomel excite greater hepatic irritation than large ones; it is consequently rather difficult to say, on what principle the latter are had recourse to, in this disease. If with the view of being taken into the system, the hope seems rather chimerical, seeing that Ptyalism is comparatively of rare occurrence as a sequela of the disease, and I believe quite unknown as the effect of the remedies, during its continuance. When the stage of depression has been overcome, and reaction fairly established, a combination of this medicine, with any warm aromatic purgative, will be exceedingly useful in clearing off bilious colluvies, or perhaps rather in stimulating the liver to throw off the residue of the undecarbonised blood remaining in the system. I have had little experience in administering Calomel in large doses, with the view of tranquillizing the stomach; nor do I think that an object either of very great importance, or very difficult of attainment. And in so far as consists with my experience, the sudden cessation of vomiting and purging, without symptoms of reaction becoming at

the same time apparent, is one of the most dangerous states, that presents itself in the progress of Cholera Asphyxia.

Of Nourishment and Drink.—With the view of allaying thirst and supporting the patient's strength at the same time, I have uniformly been in the habit of allowing the sick a few ounces of milk from time to time; to this I have some times added twenty or thirty grains of the Carbonate of Magnesia, every second or third hour, and I think with advantage. I have administered the magnesia in three drachm doses, as recommended by Mr. Ainslie, but not, in my opinion, with any additional benefit: when exhibited in scruple doses, it would appear to act merely as an antacid; whereas, when given in larger doses, it acts as a purgative, depressing the powers of life, instead of rousing them. Given in the mode I have recommended, it is likewise frequently useful in relieving hiccup, which is not a very uncommon symptom in this disease, and by no means a fatal one. Of Magnesia and milk, or Cajeput Oil, as *specifics* in Cholera, it is hoped, it is superfluous in the present advanced state of medical science to offer a remark. The very idea could only have been tolerated during periods of anxiety, agitation, and alarm. Cholera is as much to be treated on general principles, as any other species of Asphyxia; and every means external or internal, capable or likely to assist in affording relief, ought to be brought to bear on the disease.

Saline Enemata.—Of Saline Enemata, I have myself had no experience, Mr. Assistant Surgeon John

Murray, however, speaks most highly of their use as a remedy in this disease in his Report on the Medical Topography of Meærut.

Mr. Murray observes—"From considering the decided, though temporary action of the saline solution, when transfused through the veins, together with its inefficacy when swallowed, I resolved to try it, in the form of enema, administered hot, and at short intervals. The following extract is from a report to Dr. Burke, Inspector General of Hospitals, in November 1834.

In Marshall's case (of Cholera), the usual treatment, viz. calomel and opium, was pursued but without success; at 6 p. m. six hours after admission, the pulse was not perceptible at the wrist, the skin cold, blue and clammy, the countenance collapsed, and the voice gone; I thought the case hopeless, but as I had in several cases, on a former occasion, found decided, though temporary, benefit in this stage of the disease from the transfusion of a *saline fluid* into the veins, I ordered the following to be administered, as an enema, every half hour.

R. Muriatis Sodæ ℥ss.

Carbonatis Sodæ ʒj.

Aqua Calidæ (120° F.) ℥ij.

At 3 p. m. he was asleep; the pulse perceptible at the wrist. He had received two enemata. He got three more during night, at intervals, when he awoke. He had slept pretty well. The pulse was distinct, and the skin warm. The countenance more natural, and the voice partially restored. The enemata were repeated every hour till noon, when the

countenance and voice were natural, the pulse distinct, and skin warm; some brown matter brought away with the enemata, mercurial purgatives were then employed, and bilious stools procured, and he gradually regained strength, under the use of bitter laxatives. The effect of the saline fluid, administered in this manner, is not so rapid, as when passed directly into the circulation. In these, the change to the florid appearance of health, and return of the pulse, with the cessation of the spasm, was simultaneous with the transfusion. The temperature of the water I consider of importance. The order, (in absence of a thermometer,) was, 'to be given as hot as could be borne, by the hand, without inconvenience.'

Since that period I have tried this remedy in several cases, both European and Native, varying the strength of the solution, and the frequency of its repetition, according to the violence of the symptoms, and the effect of the remedy. I have only lost one patient since, from this disease, a native, in whom the pulse had disappeared from the wrist. After two enemata, the pulse returned, and the vomiting and cramps ceased. I could not get a satisfactory account after this period. I believe the enemata were omitted, and he sunk."

Ice.—I have known two patients allowed ice and iced water; both in an apparently hopeless condition, and both recovered. The one was in the service of Dr. Smith, the late Physician General, and the other was then, and continues a hurkaru or messenger on the establishment of the Medical Board.

Croton Oil and Opium.—Of this remedy I have had no personal experience—I have known it rather unfavorably reported of, and I have heard it extolled; but perhaps in neither instance after a sufficient degree of experience; those who are desirous of farther information on the subject are referred to Dr. MacGregor's work on the diseases of India, and to the other writings of that gentleman, who is, I believe, the proposer of this mode of treatment.

Of Galvanism and Oxygen Gas.—Galvanism has been used with partial success, if we are to believe the accounts given by Mr. Anderson, in an interesting paper on the disease, which is to be found in the 60th No. of the Edinburgh Medical and Surgical Journal. Oxygen is undoubtedly indicated, and has been used in this country with temporary benefit; but when we reflect on the little success which attended the exhibition of both the above remedies, in the hands of Dr. Babington, in another species of Asphyxia, we cannot rationally indulge any sanguine expectations of advantage from their use, in this. Dr. Paris' account of the experiment in question is too interesting, and too much in point, to require any apology for its introduction in this place.

“It is moreover questionable, whether so powerful a stimulus may not produce a subsequent exhaustion of the muscular energy: such effect indeed would appear to have happened in the case related by Dr. Babington, where the Asphyxia had been occasioned by the fumes of burning charcoal. Having passed, (says he,) a galvanic shock through the chest, the

patient instantly to our surprise, drew his breath deep, the muscles of the abdomen were seen to re-act, though feebly, while those of the face were slightly convulsed, and the eyelids were raised; at each successive application of this powerful agent, the respirations were more forcibly performed, and the stroke of the artery at the wrist rose in the same proportion. Having procured a bladder filled with oxygen gas, we caused it to be inspired, and we thought that it was followed by an increased activity of the powers of respiration and circulation; as the heat of the body was not deficient, we now sprinkled the face and chest with cold water, which also had the effect of rousing the dormant powers of sensation, as the respiratory muscles were uniformly thrown by it into action, though in a more feeble and interrupted manner, than when we employed the galvanic influence. Having received a large supply of oxygen gas, we repeated the inhalation and the galvanic successions, alternately through the chest and head, every half hour, for three hours, when the galvanic influence was discontinued, as the heart, though uniformly excited by it, seemed in the intervals to act more feebly, and we were apprehensive, that by exalting the action of one power continually, we might destroy that equilibrium of forces, which is necessary to the maintenance of life."*

The following cases, in illustration of this part of our subject, are taken from the Official Reports on the

* Paris and Fonblanque, vol. ii. page 83.

Russian Cholera, made to the British Government by Drs. Russell and Barry.

"The first subject was a soldier, about 30 years of age, thin, but well formed. Face livid, pale, lips blue; countenance patient, but despairing; respiration difficult; skin marble cold, although the thermometer stood in the ward at 20° Reaumur. Fingers shrivelled; feet blue; scrotum black; no pulse; tongue loaded in the middle, but cold and moist; scrobiculus cordis drawn inwards and upwards; voice gone; no evacuations of any kind. Had been admitted on the 21st, with Intermittent Fever, from which he had recovered rapidly, and for six days had no paroxysm. Seized yesterday morning suddenly, about 10 A. M. with diarrhœa and vomiting.

Fifty-five minutes past 11 A. M. The bulb of a bent thermometer, with the mercury, was placed under his tongue. After some minutes the metal rose one-fourth of a degree.

2. Under the arm, in the armpit, the mercury stood exactly at 20° .

3. The negative wire of a galvanic battery was placed in contact with the back of his neck, the positive with the scrobiculus cordis: some slight twitchings of the diaphragm were produced, with feeble efforts to vomit. No pulse, becomes weaker and more deeply blue. The action of the battery, though composed of seventy two plates, was very feeble.

The above experiments continued to twenty minutes past 12 o'clock, when frictions with turpentine liniment were ordered. The poor man looks precisely like a

corpse. Sir James Wylie remarks, that the present state of the patient resembles exactly the cold fit of the apoplectic tertian, or hemitritæus of Bulgaria, from which the Russian army suffered so much, when in that country; and of which he had seen several hundred cases.

Seems to breathe better since the friction.

Thirty-five minutes past 12. Throws forward the under jaw at each respiration. Fatal sign! Death invariably follows closely upon this convulsive, though regular movement in animals, when undergoing experiments. Died at four minutes past 1 o'clock.

Second Subject.

A soldier, young, athletic, and beautifully formed; small, irregular, intermittent pulse.

Made to respire oxygen gas, from a bladder, armed with a mouth-piece. After several inhalations a slight change was thought to have taken place in the pulse. The man said, that the pains in his back were increased by the inhalation. After about fifteen minutes, the experiment was discontinued, and the patient left to ordinary means."

External applications.—External applications are generally useful as auxiliaries, but merely in that light; they ought notwithstanding never to be neglected. The general estimation, in which the hot-bath is held, does not appear to be high; the temporary relief, which it affords in some cases, is too often counterbalanced by the subsequent depression and exhaustion, which it occasions. Increased tempera-

ture, obtained by means of chaffing-dishes, filled with live charcoal, and placed under the patients' cots, I have repeatedly had recourse to, but never with decided benefit; it is besides exceedingly disagreeable to the sick, and seldom fails to increase the restlessness and jactitation, which are not only so distressing to the patient, but interfere so materially with the beneficial operation of the other remedies. Dalton's vapour bath is open to the same objection. Mercurial fumigations however, administered in that manner, might be worthy of a trial.*

The application of bottles, filled with hot-water, around the patient, ought to be attended with advantage; but they are so often mismanaged, that instead of adding to the patient's comfort, they become additional sources of annoyance. Instead of being wrapt in slips of blanket, made for the purpose, they are too often applied without any covering, and consequently seldom fail to burn, and disturb the patient, every time they come in

* Common Cinnabar might be used for the purpose, or Calomel washed in Liquor Ammonia, as recommended by Mr. Abernethy. The native mode of fumigating, recommended by Dr. Gibson, I have found very speedily to affect the system, on ordinary occasions. He describes the materials and proportions of each as follows: Quicksilver 3 iii. Litharge (Moordar Sung) 3 iss. Red Lead (Sendoor) 3 iii. Sulphate of Copper 2 ss. the whole triturated into a mass, with the leaves of a jungle plant Shetur, (I use Datura,) and divided into 14 portions, each the size of a nutmeg; when applied for use, one of these is placed on live cow-dung, in an earthen pan, and the patient, surrounded with a blanket, is exposed to its vapour for half an hour morning and evening.

contact with his body. Bags filled with heated sand may be less objectionable. The common frictions are not much better, they entirely deprive the patient of any chance of rest he might otherwise have had from his medicine. In short, the best application of this sort, that I am acquainted with, is dry fomentations. Towels or pieces of folded flannel are to be warmed over a brazier of live charcoal, and applied in constant succession to the extremities; sinapisms to the lower extremities, if judiciously made and applied, will be exceedingly beneficial, particularly in protracted cases, by assisting to preserve the sensorium in a clear and energetic state.

Such are the principles, on which I was latterly in the habit of treating this formidable disease; and it appears to me, that my practice was attended with a greater degree of success, than it had formerly been, while I endeavoured to follow up the too often indefinite directions, to be found in the earlier works on the subject. Still the success was not that, which might have been hoped for, far less desired*; and I

*The great want of success, which attends the common practice of administering calomel, opium, and stimulants in this disease, seems to have forcibly occurred to many medical officers, perhaps to most, who have either had much experience or been moderately acute observers. Mr. Ludlow, in writing on this subject, remarks: "Under the impression, that the usual treatment of Cholera with opium and calomel, especially in large doses, is far, very far from being successful," &c. And again Mr. Steart:—

"On the appearance of Cholera here in August, 1830, it should be mentioned, that in the few first cases I had, in which I adopted the

determined accordingly to glance over the materials, from which Dr. Jamieson compiled his work, with the hope of discovering a clue to some system, which might be more successful. In the search, I was fortunate enough to find a communication of importance, which would appear to have been received, after Dr. Jamieson's work had passed through the press. The following is the document in question: .

To J. JAMIESON, Esq.

Secretary to the Medical Board.

DEAR SIR,

The Cholera Morbus made its appearance, for the third time, in the 2nd Battalion 26th Regiment, on our arrival at Mhow from Kurnaul, the 15th December last: 15 men of the battalion, and eight camp-followers were attacked from that day till the 21st, when it suddenly disappeared. . I have never seen the disease so violent as in this instance; of the fifteen Sepoys, nine died, and four of the camp-followers: we were encamped close to the 24th Native Infantry and 1st Regiment Native Cavalry, and in neither of these corps did the disease appear. The first seventeen cases were treated with large doses of Calomel, Laudanum, volatiles, and stimulants, and only four recovered. Early blistering, the hot-bath, and frictions were also tried. As nothing could be more disheartening, than my present want of success, and by the

“ treatment usually followed of large doses of calomel, opium, and stimulants, and also tried blisters of scalding water, all the patients died.”

same means I had formerly used, pretty successfully, I was really at a loss, what other plan of cure to pursue. Being informed by Mr. Wilson, Surgeon to Sir John Malcolm, that some of the medical men with the Madras and Bombay troops in Malwa, had used emetics, and antimonials in many cases, successfully, the last six cases were treated on their plan, four of which I shall beg leave to detail.*

Case I.—Jhaleem Sepoy, age about 27, of spare habit, but subject to no particular complaint; was brought to hospital at 11 A. M. 18th December. Says he first felt unwell on the 16th; present illness commenced this morning, with violent purging of thin congee-coloured stuff; retching soon followed; these symptoms continue in full force; eyes sunk; pulse scarcely perceptible; skin cold and clammy; extremities cramped; great thirst; burning sensation in the epigastrium; belly distended and painful to the touch; constant cry for cold water. Tart. Antim. gr. i. every 15 minutes, till full vomiting is produced. 12 M. second dose vomited copiously, much indigested rice and dhal discharged, sour and offensive. Pulse the same; cramps less severe; one watery stool. Tart. Emetic. gr. i. to be repeated. Half-past 12 M. three severe fits of vomiting from 3rd dose; more undigested food thrown up; expresses relief from the vomiting. Another watery stool. 2 P.M. vomited once since last report; some yellowish green stuff discharged; thirst more moderate; pulse more

* On this subject refer to page 100.

distinct ; one stool ; cramps bearable. Tart. Antimon. gr. $\frac{1}{4}$, every half hour, warm water occasionally. 6 P. M. pulse improving ; has taken the medicine regularly ; vomited twice ; several bilious offensive stools ; heat pretty general ; annoyance from cramp ; trifling pain in stomach, and heat in bowels considerably relieved. Medicine to be continued in same doses. 9 P. M. Tart. Emetic has been given three times ; several reddish stools ; frequent nausea, but no vomiting ; appears languid ; pulse distinct. Tart. Antimon. in half the quantity to be given occasionally during the night. 19th, 6 A. M. slept a little ; feels easy ; took medicine four times ; four stools of same reddish offensive stuff ; vomited twice ; pulse feeble, but distinct. Tart. Ant. omitted. Infusion of ginger and congee for drink. 2 P. M. continues easy ; no vomiting or stool. Calomel. gr. x. Pulv. Antimon. gr. iii. statim. Vespere. Infus. Sennæ $\frac{3}{4}$ iii. 20th, 6 A. M. slight retching in the night ; once purged. Belly free from pain ; spasms in legs gone ; tongue moist, pulse firm. Calomel. gr. iii. Pulv. Jalap. gr. x. every two hours, till three or four copious motions are procured. 21st, 6 A. M. 3rd dose purged copiously ; countenance cheerful. Pulse good ; makes no particular complaint ; bowels to be kept open with Infus. Cherayta and Senna.

23rd, Convalescent. Discharged in January.

Case II.—Gopaul Singh, Sepoy, a stout middle-aged man ; admitted 18th December, at 11 A. M. Was suddenly seized at five this morning, vomiting succeeded in three hours ; countenance denotes great

distress. Extremities cramped and cold; thirst excessive; constant retching; stools watery, and passed sometimes involuntarily. Pulse fluttering; spasms in abdominal muscles; burning sensation in stomach and bowels. Tart. Antimon. gr. i. till full vomiting is excited. 12 M. has not been vomited by two doses; symptoms the same; one green watery stool. Third dose of one grain to be given. Half past 12 M. severe vomiting from third dose; contents of stomach congee-coloured stuff; no bile observed; very languid. Pulse indistinct; spasms not relieved; other sensations nearly the same.

2 P. M. once vomited since last report; pulse the same; one stool; distress continues. Tart. Antimon. gr. $\frac{1}{4}$, every half hour. 6 P. M. has taken the medicine regularly; vomited twice, several watery greenish stools; skin warmer; pulse a little improved; thirst and general distress less. Tart. Antim. in half the quantity last mentioned, to be given occasionally during the night. 19th, 6 P. M. the medicine given ten times; several congee-coloured motions in the night; one copious bilious discharge towards morning; observed to sleep a little; frequently nauseated, but not vomited. Pulse pretty good; heat general; feels comparatively easy. Tart. Ant. omitted. Tongue loaded; spasms in limbs trifling. Infus. of ginger and congee for drink. 12 M. favorable symptoms continued. Calomel gr. .x. Pulv. Jalap. gr. .xv. statim. 20th, 6 A. M. not purged, once vomited; slept some hours. Pulse good; thirst moderate; skin warm and moist. Ol. Ricini $\frac{3}{4}$ i. Infus.

Sennæ $\frac{3}{4}$ ii. statim. 6 P. M. six dark bilious motions; skin and pulse nearly natural.

22d, Convalescent, Discharged in January.

Case III. Bridge-Iall Choubey, a strong muscular middle-aged man; brought to Hospital at 2 P. M. 18th December. Purging and violent retching began a few hours before he came to Hospital, and continue unabated; spasm particularly violent; thirst urgent; pulse feeble; cold perspiration on face and chest; burning in bowels. Tart. Antimon. gr. i. till vomiting takes place. 6 P. M. third dose operated fully; three watery stools; pulse still very feeble; skin feels warmer, felt bitterness in the mouth after vomiting; heat in bowels continues; occasional severe griping; very restless. Tart. Antim. gr. $\frac{1}{4}$ every half hour; warm water occasionally. 9 P. M. five doses taken; three times vomited; three motions, described as copious and feculent; nausea considerable; pulse keeps up; heat more general; partial warm perspiration; cramps less severe. Tart. Antim. gr. $\frac{1}{4}$ occasionally, during the night. 19th, 6 A. M. slept some time in the night; only five doses taken, several times purged; no vomiting. Belly less painful and hot, countenance improved; heat nearly natural; pulse steady. Says he feels much relieved. Calomel gr. x. Pulv. Jalap. \mathfrak{z} i. statim. 20th, Jalap made him sick; had however three copious motions; pulse 80; cramps gone; belly easy; Oil. Ricini \mathfrak{z} iss. 21st, purged freely, makes no complaint; calls for food. 22nd, Convalescent. 28th, Discharged.

Case IV.—Benj. Beckwith, Drummer; admitted at 1 P. M. 21st December. Complaints commenced last night, with the usual symptoms of purging and vomiting, for which he had taken a dose of opium from the bazar: not finding any relief, was brought to Hospital. Constant retching and purging; muscles of arms and legs rigid, fingers bent; least motion in bed aggravates all his sufferings; belly painful to the touch; feels hard and distended. Legs cold; face covered with clammy sweat; pulse very feeble. Heat in stomach and great thirst. Tart. Antim. as in preceding cases. 6 P. M. three doses, vomited freely; matter discharged of a greenish yellow colour; does not complain so much of cramp, and thirst is less. $\frac{1}{4}$ grain doses have been given, and keep up considerable nausea and partial perspiration; has had several watery stools. 9 P. M. continues easy; skin moist; pulse stronger; four doses taken since 6 o'clock. Calomel \mathfrak{d} i. 22nd, three copious motions. Slept some hours. Pulse firm; spasms nearly gone; skin warm and moist. Ol. Ricini. \mathfrak{z} iss. 23rd, purged freely by the oil. Sensations comfortable. 24th, convalescent. 1st January discharged.

The other two cases were treated in the same manner, and as speedily recovered. Whenever an opportunity occurs, I shall certainly have recourse to this mode of treatment; the successful termination warrants a farther trial. I have heard of its having failed in many instances, but this has been the case with almost every medicine, that has been tried in Cholera: V. S. was out of the question in the majority

of the cases; the patients sank so rapidly. It is very singular, that not a case occurred in any of the other corps, or even amongst the bazar people, or inhabitants of any description. It visited this station in January last, and attacked many of the 14th Madras Native Infantry. We had reports of its being at Mudasoor and Nollye, towns through which we passed on our route from Necmutchi to Mhow. The disease is said to appear very frequently in Malwa, and to carry off many of the inhabitants.

I am, dear Sir, your obedient servant,

J. THOMSON,

*Right Bank of the
Nurbudda Muntalai-
sir April 1820.*

*Assist. Surgeon,
2nd Batt. 26th Regt.*

It is superfluous to inform the members of the Medical and Physical Society; that Dr. Thomson is one of the ablest and most intelligent members of our service. In a communication, with which I was lately favored by him, he informs me, that he has not since had an opportunity of treating Cholera Morbus, but that if he had, so great is his confidence in Tartar Emetic, that he would immediately have recourse to it again. My attention was more particularly fixed on Dr. Thomson's communication from having been informed, many years ago, by Mr. Renton, of the 1st Regiment of Cavalry, that he had been more successful with Tartar Emetic, than with any other remedy. I was likewise aware, that Mr. Sullivan, when attached to the Sylhet Light Infantry, had used emetics

with comparatively good success, in a most virulent epidemic Cholera, which swept the Cachar valley in 1825. Encouraged by these circumstances, I determined to make trial of the remedy in the first case that should occur to me, and fortunately one was not long in presenting itself. About noon (in December), I was requested by Dr. MacDowell to see one of his Syces. The man was labouring under Cholera Asphyxia; it was altogether a most favorable case for experiment: the attack was far from being a slight one; at the same time, the patient was by no means in a hopeless condition. There was purging and vomiting of congee-coloured matter, the eyes were sunk, and encircled with a dark arcola; the voice was feeble, and shrilly pectoral, and the hands cold; but the pulse, though very weak, was perfectly distinct at the wrist. The only medicine, I had at hand, was Laudanum, a tea-spoonful of which was given, and a servant sent off for a solution of Tartar Emetic. The Laudanum was vomited; and Dr. Nicolson, who happened to call, in the interim, gave the man a pill of Opium, Assafoetida, Camphor, and Capsicum, which had likewise been rejected. I repeated the Laudanum; but with no better success, and the man was evidently losing ground rapidly. It was now two o'clock P. M. and the Tartar Emetic solution had arrived. It consisted of eight grains of Tartar Emetic, dissolved in as many ounces of water; of this one ounce was given every quarter of an hour, and the patient was directed to drink as much warm water as he liked. The medicine was taken three times, and

produced far less vomiting, than might have been expected or desired; and no depression of the vital powers, whatever. I saw him again at 4 o'clock, and if he were not better, he certainly was not worse. The pulse was as good as before, and the respiration as easy as a child's. I now directed two drachms of the solution, ($\frac{1}{4}$ of a grain of Tartar Emetic,) to be given every half hour only. I saw the man again at 6 o'clock P. M. and he was decidedly worse; this I attributed to the diminished quantity, in which the medicine had been given, and determined to recur to the one grain doses, notwithstanding the remonstrances of Mr. Sully, who happened to be with me at the time. The man took two or three doses, when the medicine was expended. We saw him at 8 P. M. and he was certainly not worse—perhaps better. The medicine appeared to have completely the power of suspending the progress of the disease *pro tempore*. A farther supply of the emetic solution was ordered to be procured, and instructions given to administer one ounce more, and a pill of calomel, camphor, and opium at bed-time. I was wakened at 11 P. M. and informed, that the solution had only then arrived, and that the man was much worse in every respect. I directed the solution to be left off, and the man to have the calomel, camphor, and opium pill immediately, with ammoniated draughts during the night, and occasionally milk and magnesia to support his strength, and allay his thirst. I was awake next morning with the pleasant but unexpected tidings, that the patient was much better; he was so, and had

had a feculent motion during the night. The case afterwards proceeded favorably, and the only thing else worthy of remark is, that about noon he again appeared to be in a doubtful state, when I administered one ounce more of the Emetic solution, without its producing the slightest depressing effect.

Shortly after the occurrence of this case, I had occasion accidentally to learn, that Cholera was prevailing to an alarming extent at Bancoorah. I lost no time accordingly in addressing a letter to Dr. Cheek, the medical officer at that station, of which the following is a copy :

“ MY DEAR SIR,

“ I have learned by accident, that Cholera is prevailing to a great extent at, and around the civil station of Bancograh, and have in consequence been induced to address you on the subject.

“ On looking over the records of this office, I was fortunate enough to find a communication containing six cases of the disease, treated in succession, by means of Tartar Emetic, with perfect success. A copy of one of these I have now the pleasure to send you.

“ I had myself, very soon after, an opportunity of making trial of the remedy, and with perfect success ; I used it in the same doses ; but as my patient afterwards threatened to relapse, I was obliged to recur to the one-grain doses a second time. The most remarkable effects of the remedy are these : notwithstanding the free use of warm water, it pro-

duces much less vomiting than might be expected : judging from its effects, it would appear to stimulate, rather than depress ; under its influence, respiration remains free, easy, and natural ; and lastly, it would almost appear to have the power of suspending the progress of the disease *pro tempore* : to qualify these praises, however, I must inform you, that I have only myself treated one case, in the manner described.

“ I made a solution of the medicine in the proportion of one grain, to the ounce, for facility of administration, and followed up its use by a pill of calomel, camphor, and opium at bed-time.

“ I have been informed by an intelligent member of the profession, not in the service, that he has had very great success, by administering portions of a solution of half a drachm of Sulphate of Zinc in twenty-four ounces of water ; for my part I would still have recourse to opium, in the commencement of the disease, administering one, two, or three doses ; but failing to procure sleep, or a decided mitigation of the symptoms, I would immediately have recourse to the emetic remedy, which need not, by the way, interfere with external applications.

“ Should you be induced to try this mode of treatment, any cases or information, you may have the goodness to afford me, regarding the result, will be highly acceptable.”

My good intentions, I am happy to say, were met with that spirit of cordiality, which might have been expected from Dr. Cheek's known liberality ; and the result has been the annexed schedule, containing the

histories of 103 cases of Cholera Morbus, 74 of which were treated with the emetic remedy.*

Of these one hundred and three cases, forty-two terminated fatally; of twenty-nine cases, treated on the old system, twenty-three proved fatal: whereas of seventy-four cases, treated by the emetic remedy, only nineteen had a fatal termination. On some occasions Mr. Cheek would appear to have lost confidence in the emetic remedy, and returned to the usual mode of treatment. Cases 43, 44, 45, and 52 are instances of this, and valuable they are, as shewing, that the disease had in no wise degenerated in point of virulence; for of the four cases so treated, two, or one-half died. Of sixty-nine persons, who were bled, nineteen only perished; of those, from whom six ounces of blood were obtained, only one died; of those from whom four ounces were obtained, only one died; and in all the other fatal cases, even less than this quantity was procured, so that they may be said not to have been bled at all. The medicine recommended by Mr. Hope of Chatham (nitrous acid ʒi. camphor mixture ʒviii. and laudanum gtt. xl.) was exhibited, as directed, in several cases, without apparent advantage. In nine instances, the patients were treated on Mr. Searle's principles, that is with the Muriate of Soda in solution; of these seven died: one was successfully treated with the aid of V. S. to twelve ounces; and another escaped, through the aid of other remedies,

* It has been judged unnecessary to republish at full length in a brief work of this nature, this extended but highly interesting document.

after the solution of Muriate of Soda had totally failed to afford any relief. The remedy, however, such as it is, is decidedly no invention of Mr. Searle's; for a very full account of the practice of administering salt and water, in Cholera, is given at page 243 of Dr. Jamieson's Report.

"This practice," he remarks, "was tried very successfully by the Native Doctor with Colonel Skinner's Horse, at Shapoor, in Rajpootana, in the autumn of 1818. Every man was, as soon as taken ill, vomited with salt and water, and then had opiates; and although the corps was largely affected, not a single death occurred." The practice is thus described in a letter from the corps. "Warm salt and water is given till the stomach is well cleared, and then small doses of Laudanum and Peppermint, or the Essence of Cardamoms when the irritability of stomach is stopt; afterwards violent thirst comes on, for which boil Anise, and when cooled, give it as often as required by the patient. Great numbers were cured by this method. The natives of Indore cured great numbers: I may say the only medicine they had, was juice of onions and bazar arrack. It was also practised at Mhow, and a great number of men were cured in the camps; but with the salt and water, as above, not a single man was lost in this corps: and stopping it suddenly, with a large dose of Laudanum and Calomel, was certain death."

Mr. Searle then, it would appear, has only altered the native practice sufficiently to insure its failure: for I am not prepared to say, that the practice

might not be attended with a certain degree of success, if followed up by the use of opiates and stimulants, as recommended by Dr. Jamieson; indeed, it is probable, that the administration of any medicine, possessed of emetic qualities, would, to a certain extent, be found productive of advantage; at least, it is in favor of such a supposition, that Tartar Emetic has been used with success by Dr. Thomson, Ipecacuan and Tartar Emetic by Mr. Cheek, and Sulphate of Zinc by Mr. Evans; while every journal teems with the success which has attended the administration of emetics of white Mustard, in the disease, as it prevails in Europe.—There is a considerable difference in the mode of exhibiting emetics recommended by Dr. Thomson, and that practised by Dr. Cheek, and it would ill become me, without positive experience, to offer a decided opinion on the subject. I may however be permitted to remark, that while I would be loath to delay so long, before having recourse to Calomel, opium, and stimulants, as the former, I would be inclined to use emetics more freely, than the latter.—It will likewise be observed, that there is a discrepancy between the opinions I have expressed, in regard to the time of administration, and the nature of the cases, in which I would have recourse to emetics, and the practice recorded by Dr. Cheek, the latter exhibiting emetics in every instance, at the commencement of the treatment, after venesection. I confess, I am in doubt, if Dr. Cheek is not right; the difference however between us, like that between him and Dr. Thomson, can only be solved.

by the result of farther experience; and to that tribunal I commit both for the present.*

The beneficial action of emetic substances, in this disease, is a subject of curious and important speculation. It can scarcely be attributed to their emulging the biliary system; for bile seldom follows their operation: and it is difficult to conceive it to depend on their sedative or depressing influence; for in this disease, they appear to produce little effect of the sort: that they may determine to the surface, and thus relieve internal congestion, is not impossible, although I confess, that such a supposition appears to me somewhat incompatible with their known power of diminishing the force of the circulation. May they not, let us ask, act in some degree by exciting the

* Since writing this Essay, I have been informed, that the following line of practice has been pursued in one of His Majesty's Regiments in this country, with a more than ordinary degree of success. One grain of Tartar Emetic is given in a dose of Senna Mixture, the moment the patient is admitted into Hospital: this is repeated in ten minutes, and again, if full vomiting be not induced; after the operation of the Emetic, forty drops of Tincture of Lytta are given in a little brandy and water, every hour, until re-action is established.

NOTE.—The only point, which it strikes me, you have not quite enough insisted on, is the necessity of *early* purgatives of the warm resinous kind in combination with Calomel; Turpentine and Castor Oil too I have found most beneficial, as soon as the stomach will bear it. I have tried Emetics occasionally, and was much gratified by their effect. The Sulphate of Zinc is, I think, the best. I am convinced that many people dislike the Opium and Brandy given in such enormous and repeated doses. They are good at the *very commencement*, but poisonous afterwards.—H. H. GOODFIVE.

organs employed in the decarbonizing process? This is a subject on which I can offer nothing farther, than conjecture; but I confess it is one, which I anxiously desire to see brought to the test of experiment. In the commencement of fever, the exhibition of an emetic is often attended with the immediate cessation of morbid action; a circumstance, which may be readily explained, if there is any truth in the above surmise, and in the opinions I have hazarded on the nature of fever; but which it is difficult to account for, on any other supposition.

I am unwilling to conclude this communication, long as it has already proved, without returning my best thanks to Drs. Thomson and Cheek. To the former I am indebted for the knowledge of what I consider to be a valuable remedy; and to the latter, not only for the readiness and ability with which he has put it to the test of experiment, but for the liberality with which he has favored me with the result.

CONCLUDING OBSERVATIONS.

THOUGH perhaps it might have been somewhat out of place, I confess that I had a strong desire to enter somewhat at length, on the subject of the rates of sickness and mortality prevailing among the different classes in India, more particularly in regard to those in confinement in the various Jails; that however unfortunately, my time will not permit me to do at present, farther than by the publication of the annexed Tables, which I trust will be found, by those interested in the subject, not devoid of novelty and information.

That the rates of sickness and mortality among convicts are influenced, and that to a great extent by many circumstances independent of age, and these necessarily concomitant on incarceration cannot be doubted; for while in some Jails these rates are exceedingly moderate, in others they are occasionally frightfully high. The truth of this will farther appear from the following quotation from the 'Prison Discipline Committee's Report. *Vide* para. 177.

"The health of the transported convicts is generally good: the usual daily percentage of sick at Singapore is under four and a half, and the yearly percentage of deaths is about 5. The percentage of deaths at Malacca is considerably less than at Singapore,

being under two and a half. The percentage of deaths at Penang may be taken at five, the same as at Singapore. The percentage of deaths in the Tenasserim Provinces for the last three years has been about 5.7. The mortality at Singapore and Penang is a little higher than the mortality of prisoners in the Western Provinces, but very much lower than that of prisoners in Bengal, and it is considerably lower than the average mortality of prisoners over the whole of this Presidency.* It must be remembered that the vast majority of transported convicts are detained till their death, and that the vast majority of convicts imprisoned in India are liberated many years before their deaths. The annual percentage of deaths in Allipore Gaol is nearly 5.8. From the above data, it may be considered to be demonstrated that the lives of prisoners, sentenced to perpetual imprisonment, are prolonged by their transportation to the Straits of Malacca."

The Prison Discipline Committee in their Report state, that the comparison drawn by me between the state of sickness and mortality prevailing among native troops and native prisoners, can afford no useful information, the circumstances in which these parties are placed being so different; perhaps a comparison between the state of health enjoyed by the

* Average for 4 years.	{	In Western Provinces,.....	4.64.
		Lower ditto,.....	8.33.
		Both,	6.56.

convicts in the Bengal Presidency and those in the Straits of Malacca, may not be deemed so open to objection.*

The following conclusions, exhibiting the rates of sickness and mortality prevailing among different classes over a considerable portion of the globe, are so replete with information, that I feel assured the reader will thank me for presenting them to his notice. They are extracted from a masterly Prize Thesis on the Influence of Climate, &c. &c., by Dr. Arthur Saunders Thomson, published at Edinburgh in 1837, a work which I trust the author will live to present to the world in a more extended form.

“Having concluded our observations on the influence which an intertropical climate has on the health and mortality of the natives of a temperate country, I shall now briefly state the facts which have been collected on this subject, so as to render them of more easy comparison. “The ratio of mortality which occurs among the natives of Great Britain residing in countries situated within the tropics is much greater (in all the instances we have examined) than that which happens in their native country. This will be rendered obvious at one glance by the following statement:—

On this subject refer to Note, page 7.

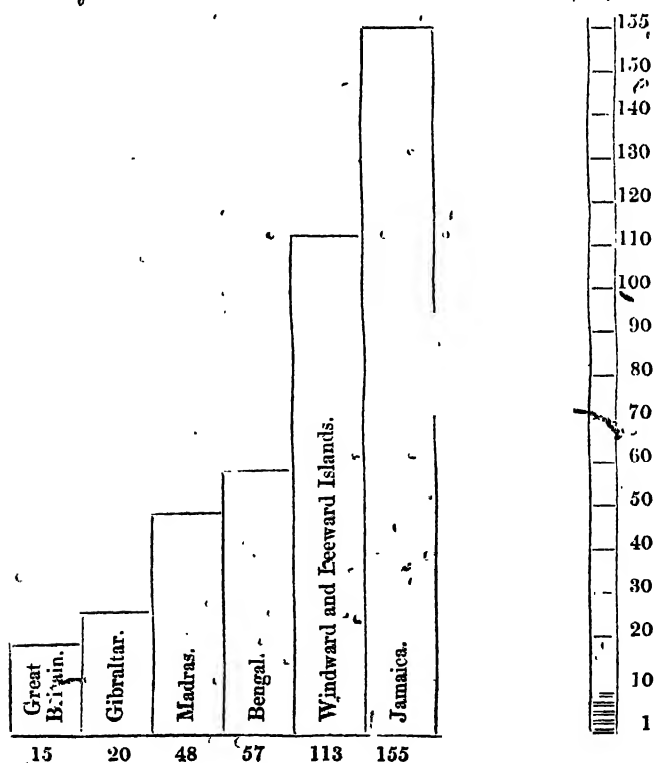
"TABLE—Showing the mean annual Strength and annual ratio of mortality per 1000 which occurred among British Troops serving in the undermentioned countries, together with the period of observation, and the increase of mortality over that of Great Britain.

Stations.	Period of observation.			Mean annual strength.	Annual ratio of mortality per 1000.	Increase of mortality per 1000 beyond that of Great Britain.
	Years.	From	To			
TEMPERATE.						
Great Britain, ...	10	1819	1828	46,460	15	
Canada,.....	7	1816	1822	2,975	11	
Malta,	8	1824	1831	2,226	15	
Gibraltar,	7	1816	1822	3,267	20	5
TROPICAL.						
Madras,.....	4	1827	1830	11,820	48	33
Bengal,	7	1826	1832	8,700	57	42
Windward and Leeward Islands	19	1810	1828	5,768	113	98
Jamaica,	19	1810	1828	2,528	155	140

From this table we at once observe the difference of the mortality, which occurs among British troops employed in temperate and tropical climates. In tropical countries the ratio of mortality is in every instance higher than happens in their native climate. Thus in India it is four times, in the Windward and Leeward Island command, it is nine times, and in Jamaica ten times greater than what occurs in Great Britain. By the last column of the above table we learn, that of 1000 natives of Great Britain residing in Madras, there are 33 more deaths, than would have occurred had the same number of men been living in Great Britain, so that the insalubrity of the climate of Madras may be stated at 33.

Again, of 1000 natives of the united kingdom residing in Jamaica, there are 140 more deaths, than would have occurred had the same number of men been stationed in Great Britain; the insalubrity of the climate of Jamaica is therefore 140. The following sketch will render more obvious the increased mortality which occurs in tropical countries, among the natives of a temperate climate.

Diagram, showing the relative annual mortality among British Troops at the undermentioned stations.



We formerly stated that Mr. Edmonds had assumed, from a great extent of observation, that there occurs about two years of sickness to each death, and that there is little deviation from this rule, except in very unhealthy climates. In the English army, at home and inactive, there are two years and a-half of alleged sickness to each death. In the English army in the East Indies, there is one year and eight months of sickness to each death; and in the English army in the West Indies, the sickness is estimated at one year and four months.* From these facts, we conclude that the diseases, which attack Europeans in the East and West Indies, prove more rapidly fatal, than those which occur among them in their native country.

It may not be out of place here to observe, that the mortality among officers of the British army serving in tropical climates is not so high as that of the soldiers. Thus taking the mean of all the tropical stations where British troops are employed, the annual ratio of mortality per 1000 among the officers is about 29, whereas among the soldiers it is 78.† I may state, however, that there are many causes which tend to diminish the mortality among officers, which the private soldier cannot avail himself of, such as returning to England when sick, additional comforts, &c.; but

* British Medical Almanac 1836, p. 171.

† Data obtained from a paper on this subject in the *Union Service Journal*, by Lieut. Tulloch, 45th Regiment.

I refer the reader for an explanation of this to the paper above alluded to.

This comparatively low ratio of mortality among the officers serving in tropical climates, compared with that of the private soldier, shows how the influence of a tropical climate may have its deleterious influence ameliorated by care; and although we cannot attribute the increased mortality which occurs among natives of Great Britain, residing in tropical climates, entirely to their habits and condition, it is to be expected, that the mortality might be materially diminished, by careful attention to the diet, clothing, and accommodation. Thus, Isert (in his *Voyage to Guinéa*) attributes the mortality of the Europeans in that région to their licentious mode of living, which is totally misplaced in that climate. Colonel Flinter regards the habitual abstinence of the Spanish soldiers, as the cause of the comparatively low ratio of mortality, which occurs among them in the West Indies.—Niebuhr, also, who saw all the companions of his travels perish around him, remarks in his *Account of Arabia*, that their diseases arose from their European mode of life, such as eating too much animal food, and exposing themselves to the night air.*

From the foregoing statement of facts or results we may conclude :

* Rudolphi, *Grundriss der Physiologie*, i. as quoted in Hawkins' *Medical Statistics*.

1st. That the annual ratio of mortality, which occurred among the slave population of all ages in the British settlements in the West Indies, varied from 25 to 41 per 1000, or, taking the mean to be 28 per 1000 annually, which is about 1 death out of every 35. (The period of observation was about thirteen years.)

2d. That the mean annual mortality which occurred among the black troops, Africans, employed in the Windward and Leeward Island command, for a period of nineteen years, was 55 per 1000, or 1 death annually out of every 18 men.

3d. That one-third of the mortality among the negro troops in Jamaica is caused by pulmonary disease, one-tenth by disease of the bowels, and about one-fourth from fever.

4th. That the annual ratio of mortality among the population (all ages) in Madura and Dindigul, provinces in India, was 13 per 1000.

5th. That the mean annual ratio of mortality, which occurred among the native troops in the Presidency of Madras, for a period of four years, was 1.35 per 1000, or 1 in 74.

6th. That of the 13.5 per 1000 that died in Madras, 2.5 per 1000 died from fevers, 0.6 from diseases of the lungs, 4.4 from disease of the bowels, and 6 from other diseases.

7th. That the mortality which occurred among the native troops in the Bengal Presidency for a period of one year was 10.6 per 1000.

8th. That out of every 1000 native troops in the Presidency of Madras, 527 have an attack of disease annually, and that there occurs 1 death for every 39 treated. (Period of observation four years, 1827 to 1830.)

9th. That out of every 1000 native troops in the Presidency of Bengal and Agra, 47 are constantly confined to hospital with sickness.

10th. That the most fatal season of the year among the natives of Great Britain, residing in the West India Islands, are the months of August, September, October, and November.

11th. That the annual ratio of mortality which occurs in sixteen countries of Europe varies from 16 in 26, or 38 per 1000, to 1 in 51, or 19 per 1000.

12th. That the annual ratio of mortality among British troops stationed in Great Britain is 15 per 1000.

13th. That the expectation of life in ancient Italy was shorter than the expectation of life at present estimated for England and France.

14th. That the most fatal class of diseases among the inhabitants of London is pectoral complaints, after which come fever, (idiopathic and exanthematous.)

15th. That the annual ratio of deaths per 1000 of the inhabitants in London from consumption and fever have gradually decreased, since the middle of the fifteenth century.

16th. That the annual ratio of mortality among the inhabitants of all ages in the Cape of Good Hope in 1834 was 1 in 74, or 13 per 1000. •

17th. That out of every 1000 British troops in Scotland, 787 have an attack of disease annually, and there occurs 1 death for every 71 treated. (Period of observation seven years, 1816 to 1822.)

18th. That out of every 1000 British troops stationed in Great Britain, 44 are constantly confined to hospital with sickness.

19th. That the most fatal season of the year in London and Belgium are the months of December, January, February, and March.

20th. That the seasons have a greater influence on the mortality in countries, than towns.

21st. That the annual ratio of mortality among British troops serving in the Presidency of Bengal is 57 per 1000, or 1 death out of every 17 men. (Period of observation seven years.)

22d. That of the above mortality of 57 per 1000 among British troops in Bengal, 15 per 1000 died from fever, 18 from disease of the bowels, and 24 from other diseases.

23d. That the annual ratio of mortality among British troops serving in Madras is 1 in 21, or 48 per 1000. (Period of observation four years.)

24th. That of the above mortality of 48 per 1000 among British troops in Madras, 6.5 per 1000 occurred from fever; 13.7 from disease of the bowels; and 2.2 per 1000 from disease of the lungs; the remaining 21 of other diseases.

25th. That out of every 1000 British troops in the Presidency of Bengal, there are 1717 admissions into hospital, or nearly two attacks of disease

annually, for every European soldier in Bengal, and there occurs 1 death for every 30 treated. (Period of observation seven years).

26th. That out of every 1000 British troops in Bengal, 129 are constantly confined to hospital with sickness.

27th. That the annual ratio of mortality among British troops serving in the Windward and Leeward Islands is 113 per 1000, or 1 in 9. (Period of observation nineteen years.)

28th. That the annual ratio of mortality among British troops in Jamaica is 155 per 1000, or 1 in 6. (Period of observation nineteen years.)

29th. That seven-eighths of the mortality among British troops in Jamaica is caused by fever, and about one-eighteenth by disease of the lungs."

30th. To which may be added, that length of residence does not appear to acclimatise or confer a greater degree of immunity from disease in Bengal, but that among the young Civilians arriving in the country, the ratio per cent. of deaths during the first year's residence may be stated to be 1.95, for the 2nd year's residence 2.35, for the 3rd year's 2.00, and for the 4th 2.20—and that similar results obtain among Military Officers.

31st. That the comparative annual per centage of mortality prevailing among the Officers of the three Presidencies of India, viz., Bengal, Madras, and Bombay, is, according to Captain Henderson, for Bengal, including Medical Officers, 3.12 per cent. ; for Madras 4.49 per cent., and for Bombay 3.94 per cent.

TABLE No. 1.

Exhibiting the Strength, Admissions, and Deaths, distinguishing those from Cholera among the Prisoners in the Jails throughout the Presidencies of Fort William, and the North Western Provinces, during the year 1843.

Divisions.	STATIONS.									
		Average strength of Prisoners during the year.	Total admissions during the year.	Ratio per cent. of admissions to strength.	Deaths by ordinary diseases.	Deaths by Cholera.	Total deaths.	Ratio per cent. of deaths by ordinary diseases.	Ratio per cent. of deaths by Cholera.	General ratio per cent. of deaths to strength.
Presidency.	Alipore Jail,	1357	2895	213	128	5	133	9.43	0.36	9.79
	Russah Jail,	817	1201	147	56	7	63	6.84	0.85	7.69
	Total,	2174	4096	189	184	12	196	8.47	0.55	9.2
Barrackpore.	Baraset,	159	399	251	0	1	1	0	0.62	0.62
	Beerbhoom,	525	399	76	41	4	45	7.71	0.78	8.47
	Burdwan,	497	1031	207	18	16	34	3.62	3.22	6.84
	Baneorah,	217	178	82	4	1	5	1.84	0.46	2.30
	Balasore,	184	309	168	13	1	14	7	0.54	7.61
	Bauliah,	742	1090	146	49	9	58	6.73	1.21	7.94
	Cuttack,	371	581	156	44	5	49	1.34	1.35	2.69
	Dinagapore,	684	956	139	55	17	72	8.49	2.49	10.58
	Hooghly,	388	806	207	16	6	22	4.12	1.55	5.67
	Jessore,	788	859	109	29	10	39	3.67	1.27	4.94
	Kishmaghur,	769	928	120	19	4	23	2.47	0.52	2.99
	Maldah,	198	248	125	16	4	20	8.8	2	10.10
	Midnapore,	857	1710	204	32	9	41	3.82	1.7	4.89
	Moorsshedabad,	586	804	137	57	12	69	9.72	2.4	11.76
	Poorie,	59	182	308	4	2	6	0.67	3.39	4.6
	Rungpore,	681	728	112	52	3	55	7.63	0.44	8.7
	Total,	7685	11208	146	449	104	553	5.85	1.35	7.20

TABLE No. I.—*Continued.*

Divisions.	STATIONS.	Average strength of Prisoners during the year.	Total admissions during the year.	Ratio per cent. of admissions to strength.	Deaths by ordinary diseases.	Deaths by Cholera.	Total Deaths.	Ratio per cent. of deaths by ordinary diseases.	Ratio per cent. of deaths by Cholera.	General ratio per cent. of deaths to strength.
Dacca.	Akyab,	409	579	141	37	11	48	9.4	2.70	11.74
	Backergunge, ...	635	385	60	26	19	45	4.0	3.0	7.0
	Bogra,	253	315	134	35	0	35	14.97	0	14.97
	Bulloah,	208	321	154	6	1	7	2.88	0.48	3.36
	Chittagong,	385	380	100	8	0	8	2.7	0	2.7
	Chitra,	310	212	68	10	1	11	3.22	0.32	3.54
	Dacca,	610	748	122	10	11	21	1.51	1.71	3.22
	Debrooghar,	88	185	201	22	1	23	25.0	1.13	26.13
	Farradpore, ...	495	540	109	26	14	40	5.25	2.83	8.8
	Gowahatty,	194	425	219	21	28	49	10.86	14.42	25.28
	Gowalparah,	183	282	154	7	9	16	3.71	4.92	8.63
	Kyook Phyoo ...	237	448	180	2	2	4	0.84	0.84	1.68
	Mymensing,	433	627	138	16	10	26	3.51	2.20	5.71
	Nowgong,	201	256	126	18	20	38	9.0	10.0	19.0
	Pubna,	278	282	101	19	3	22	6.83	1.17	8.0
	Ramree,	114	307	266	4	0	4	3.54	0	3.54
	Sandoway,	52	120	375	4	0	4	12.50	0	12.50
	Seebasagar,	70	116	165	3	0	3	4.28	0	4.28
	Sylhet,	293	377	128	37	0	37	12.62	0	12.62
	Tipperah, ...	436	503	115	15	10	25	3.44	2.21	5.65
	Tezapore,	174	196	112	14	8	22	8.5	4.51	12.56
	Total,	6030	7604	126	340	148	488	5.64	2.45	8.9

, TABLE No. 1.—Continued.

Divisions.	STATIONS.	Average strength of Prisoners during the year.	Total admissions during the year.	Ratio per cent. of admissions to strength.	Deaths by ordinary diseases.	Deaths by Cholera.	Total deaths.	Ratio per cent. of deaths by ordinary diseases.	Ratio per cent. of deaths by Cholera.	General ratio per cent. of deaths to strength.
Dinapore.	Patna,	1015	577	56	30	35	65	2.85	3.45	6.30
	Purnea,	524	771	147	11	27	145	22.63	5.15	27.78
	Gyah,	1351	1440	106	125	11	136	9.25	0.81	10.6
	Bhaugulpore,	661	779	117	57	18	75	8.62	2.72	11.34
	Arrah,	740	361	48	82	7	89	11.8	0.34	12.2
	Saurun,	687	381	55	47	0	47	6.84	0	6.84
	Tirhoot,	786	1210	154	133	0	133	16.92	0	16.92
	Monghyr,	846	1170	138	136	23	159	16.7	2.71	18.78
	Hazareebaugh,	205	219	106	16	0	16	7.80	0	7.80
	Champaran,	352	278	79	23	1	24	7.10	0.28	7.38
	Pootadary,	116	169	145	1	0	1	0.86	0	0.86
	Kissenpore,	618	1705	275	78	5	83	12.62	0.80	13.42
Benares.	Total,	7901	9060	115	846	127	973	10.79	1.61	12.31
	UPPER PROVINCES.									
	Benares,	734	708	96	60	5	65	8.17	0.68	8.85
	Ghazee-pore,	635	831	131	24	7	31	3.78	1.10	4.88
	Mirzapore,	536	1211	144	73	8	81	8.73	0.65	9.69
	Juanpore,	763	951	124	26	0	26	3.41	0	3.41
	Azingurh,	624	418	78	15	1	16	2.40	0.16	2.56
	Gorruckpore,	1238	573	46	44	5	49	3.5	0.40	3.95
	Total,	4830	4692	97	242	26	268	5.1	0.54	5.55

TABLE No. 1.—*Continued.*

Divisions.	Prisons.	Average strength of Prisoners during the year.	Total admissions during the year.	Ratio per cent. of admissions to strength.	Deaths by ordinary diseases.	Deaths by Cholera.	Total deaths.	Ratio per cent. of deaths by ordinary diseases.	Ratio per cent. of deaths by Cholera.	General ratio per cent. of deaths to strength.
Cawnpore.	Cawnpore,	1136	725	63	57	1	58	5.2	0.8	5.10
	Futtyghaz,	796	604	76	36	0	36	4.52	0.0	4.52
	Mynpoorie,	681	495	72	51	0	57	7.49	0.0	7.49
	Etawah,	305	366	120	14	1	15	4.59	0.33	4.92
	Hameerpore,	336	444	132	30	0	30	8.93	0.0	8.93
	Banda,	512	449	88	20	0	20	3.90	0.0	3.90
	Futtyghaz,	533	345	65	11	0	11	2.6	0.0	2.6
	Allahabad,	841	1038	122	47	0	47	6.30	0.0	6.30
	Khodagunge,	249	284	114	0	1	1	0	0.40	0.40
	Total,	5389	4750	88	266	3	269	4.95	0.5	5.0
Meerut.	Meerut,	401	485	120	42	2	44	10.49	0.49	10.98
	Dehlie,	571	2533	443	108	2	110	19.9	0.35	19.44
	Goorgaon,	302	921	304	69	0	69	22.85	0	22.85
	Hinden River for 5 Months,	670	1457	217	6	0	6	0.89	0	0.89
	Shajehanpore,	540	487	90	44	0	44	8.15	0	8.15
	Moradabad,	1253	1780	142	91	9	100	7.26	0.71	7.97
	Barclay,	1234	1403	113	62	7	69	5.2	0.56	5.58
	Saharunpore,	283	562	200	27	0	27	9.54	0	9.54
	Almogah,	63	332	527	7	0	7	11.11	0	11.11
	Dehra Dhoon,	92	212	234	6	0	6	6.41	0	6.41
	Rijnore,	157	539	215	9	1	10	5.73	0.63	6.36
	Budaon,	483	774	162	27	0	27	5.59	0	5.59
	Muzaffernagar,	232	298	128	23	0	23	1.28	0	1.28
	Total,	6281	11583	184	521	21	542	8.92	0.33	8.62

TABLE No. 1.—Continued.

Divisions.	STATIONS.	Average strength of Prisoners during the year.	Total admissions during the year.	Ratio per cent. of admissions to strength.	Deaths by ordinary diseases.	Deaths by Cholera.	Total deaths.	Ratio per cent. of deaths by ordinary diseases.	Ratio per cent. of deaths by Cholera.	General ratio per cent. of deaths to strength.
Agra.	Agra,.....	1036	1430	138	54	30	84	5.21	2.80	8.10
	Muttra,.....	453	616	68	21	5	26	4.85	1.10	5.95
	Allypukur,.....	619	12.7	200	27	0	21	3.34	0	3.34
	Bolundshukur,.....	340	297	87	15	0	15	4.41	0	4.41
	Total,.....	2448	3280	134	111	35	146	4.53	1.2	5.55
Sirhind.	Paneeput,.....	233	506	217	55	0	55	23.63	0	23.60
	Rhotuck,.....	138	325	235	19	0	19	13.99	0	13.99
	Hissar,.....	222	671	302	29	1	30	13.6	0.45	13.51
	Sirsa,.....	292	521	178	21	2	23	7.20	0.68	7.88
	Ferozepore,.....	265	368	139	13	0	13	5.0	0	5.0
	Loodiana,.....	144	190	132	6	0	6	4.16	0	4.16
	Subathoo,.....	78	241	309	3	0	3	3.87	0	3.87
	Umballa,.....	1051	1315	125	128	0	128	12.17	0	12.17
	Total,.....	2423	4137	170	274	3	277	11.33	0.12	11.45
Saugor.	Saugor,.....	315	795	252	21	1	22	6.66	0.39	7.0
	Jubbulpore,.....	1153	871	76	64	1	65	5.55	0.8	5.63
	Hussingabad,.....	140	237	170	2	0	2	1.43	0	1.43
	Bastool,.....	122	205	168	10	0	10	8.10	0	8.10
	Seonee,.....	164	352	215	6	0	6	3.66	0	3.66
	Nursingpore,.....	0	0	0	0	0	0	0	0	0
	Total,.....	1894	2460	130	103	2	105	5.44	0.11	5.55
Neemuch.	Ajmere,.....	231	208	133	12	5	17	5.20	2.16	7.36
	Beawur,.....	72	116	161	0	0	0	0	0	0
	Mundlaizer,.....	162	133	81	70	0	10	6.14	0	6.14
	Total,.....	466	557	119	22	5	27	4.60	1.6	5.66

JAMES HUTCHINSON,

Secretary Medical Board.

ABSTRACT shewing the number of Prisoners, the Ratio per cent. of Sick to strength, and of Deaths to strength, in the Jails throughout the Presidencies of Fort William, and the North Western Provinces for 1843.

	Average strength of Prisoners during the year.	Total admissions into Hospital during the year.	Ratio per cent. of admissions to strength.	Deaths.		Total deaths.	Ratio per cent. of deaths by ordinary diseases.	Ratio per cent. of deaths by Cholera.	General ratio per cent. of deaths to strength.
				By ordinary diseases.	By Cholera Morbus.				
Lower Provinces, including the Dinapore Division,	23790	31968	134	1819	391	2210	7.64	1.64	9.28
Upper Provinces,	23731	31459	132	1539	95	1634	6.44	0.40	6.84
" Total,...	47521	63427	133	3358	486	3844	7.4	1.2	8.6

JAMES HUTCHINSON,
Secretary Medical Board.

TABLE No. 2.

Abstract showing the Strength, the proportion of Sick to Well, and the Ratio of Deaths per cent., among the Native Troops, during the year 1833; intended to exhibit the Comparative Salubrity of particular stations or districts, and likewise the rate of mortality prevailing among this class of persons, compared with Native Prisoners or European Troops.

Stations.	Average strength, during the year.	Average admissions, during the year.	Proportion of sick to well	Number of deaths.		Total deaths, during the year.	Ratio per cent. of deaths from ordinary diseases.	Ratio per cent. of deaths from Cholera Morbus.	General ratio of deaths to strength.
				By ordinary diseases.	By Cholera Morbus.				
Presidency,	1405	144	1 to 10	76	6	82	5.43	0.43	5.86
Barrackpore, ...	9649	814	1 to 11½	186	2	188	1.34	0.02	1.96
Berhampore, ...	5762	290	1 to 20	72	4	76	1.26	0.07	1.33
Dinapore,	4280	187	1 to 22	50	4	54	1.18	0.09	1.27
Bonares,	5169	208	1 to 20	36	4	40	0.70	0.08	0.78
Allahabad,	6000	284	1 to 21	21	12	33	0.35	.20	0.55
Cawnpore,	12980	488	1 to 26	67	31	98	0.50	0.24	0.74
Meerut,	12728	466	1 to 27	79	1	80	0.71	„	0.71
Agra,	5269	182	1 to 29	40	„	40	0.78	„	0.78
Kurnaul,	7304	225	1 to 32	56	2	58	0.77	0.03	0.80
Saugor,	6367	329	1 to 19	41	3	44	0.64	0.03	0.67
Neemuch,	13162	566	1 to 23	155	7	162	1.18	0.05	1.23
Total, ...	90075	4238	1 to 21	879	76	955	0.97½	0.08½	1.06

JAMES HUTCHINSON,
Secretary Medical Board.

TABLE No. 6.

Abstract shewing the Strength, the proportion of Sick to Well, and the Ratio of Deaths per cent., among the European Troops, during the year 1833; intended to exhibit the Comparative Salubrity of particular stations or districts, and likewise the rate of mortality prevailing among this class of persons, compared with Native Prisoners, or Native Troops.

Stations.	Average strength, during the year.	Average admissions, during the year.	Proportion of sick to well.	Number of deaths.		Total deaths, during the year.	Ratio per cent. of deaths from ordinary diseases.	Ratio per cent. of deaths from Cholera Morbus.	General ratio of deaths to strength.
				By ordinary diseases.	By Cholera Morbus.				
Presidency,	709	115	1 to 6	51	5	56	7.30	0.70	8.0
Dum-Durr,	772	131	1 to 6	47	7	54	6.14	0.90	7.04
Chinsurah,	577	88	1 to 7	42	7	49	7.60	1.20	8.80
Berhampore, ...	811	92	1 to 9	34	3	37	4.25	0.37	4.62
Dinapore,	1020	128	1 to 8	54	5	59	5.35	0.48	5.83
Benares,	1277	172	1 to 7	65	13	78	5.08	1.0	6.08
Allahabad,	112	27	1 to 4	6	0	6	0.0	5.36	5.36
Cawnpore,	2057	395	1 to 5	73	103	176	3.63	5.0	8.63
Meerut,	1995	157	1 to 13	40	3	43	2.0	0.15	2.15
Agra,	1089	96	1 to 11	25	2	27	2.40	0.18	2.58
Kurnaul,	1166	73	1 to 16	30	3	33	2.60	0.35	2.95
Saugor,	89	23	1 to 4	2	0	2	2.20	0.0	2.20
Neemuch,	325	54	1 to 6	20	2	22	7.0	0.60	7.60
Total, ...	11999	1551	1 to 7½	489	153	642	4.07	0.27	5.34

JAMES HUTCHINSON,
Secretary Medical Board.

TABLE No. 4.

Table shewing the average Strength, Admissions, and Deaths, distinguishing those by Cholera Morbus, among the Prisoners at the different Stations in Bengal, and the North Western Provinces, for five years. PERIOD OF OBSERVATION FROM 1839 TO 1843 INCLUSIVE.

Stations.	Average strength of Prisoners during the year.	Average admissions during the year.	Ratio per cent. of admissions to strength.	Deaths by ordinary diseases.	Deaths by Cholera.	Total Deaths.	Ratio per cent. of deaths by ordinary diseases.	Ratio per cent. of deaths by Cholera.	General Ratio per cent. of deaths to strength.
Allipore,	1730	2580	171	89	6	95	6.92	.42	7.34
Russagungh,	722	1030	142	44	7	51	6.94	.97	7.91
Akyab,	226	494	218	20	6	26	9.7	2.58	11.65
Tarasat,	188	337	179	3	1	4	1.60	0.53	2.13
Backergunge,	707	436	61	61	25	66	5.79	3.53	9.32
Boerbhoom,	680	386	56	44	8	52	6.47	1.17	7.64
Budwan,	457	1030	224	17	9	26	3.72	2	5.72
Bancoorah,	221	267	128	4	1	5	1.81	.45	2.26
Bahalore,	231	511	221	25	5	30	10.82	2.16	12.98
Bauleah,	845	986	116	51	10	61	6.3	1.18	7.21
Cuttack,	510	1019	200	58	22	80	11.58	4.41	15.99
Chittagong,	432	506	117	12	13	25	2.77	3.0	5.77
Dacca,	564	1487	269	18	7	25	3.19	1.24	4.43
Dumgapore,	563	1233	131	105	24	129	10.10	2.62	12.72
Furzedpore,	558	512	93	15	6	21	2.69	1.8	3.77
Gowhattee,	245	564	232	27	14	41	11.0	5.62	16.62
GowAlparrah,	153	474	310	8	5	13	5.61	3.26	8.87
Hooghly,	402	865	215	20	8	28	5.0	2.0	7.0
Jessore,	703	680	96	23	17	40	3.27	2.41	5.68
Kissenagur,	660	711	177	19	5	24	2.98	.75	3.63
Maldah,	174	222	150	10	6	16	5.75	3.46	9.21
Midnapore,	598	1146	192	40	6	46	6.61	1.0	7.61
Chirra, for 1 year,	310	212	300	10	1	11	3.29	0.32	3.61
Seelagur, for 3 years,	84	182	220	2	0	2	2.40		2.40
Moorsheadabad, ...	866	898	103	48	15	63	5.54	1.73	7.27
Myitkensing,	540	849	157	31	11	42	5.74	2.3	7.77
Noacolly,	181	264	145	6	2	8	3.30	1.11	4.41
Nowgong,	181	298	164	14	6	19	7.73	2.78	10.49
Bogoorah, for 3 years,	264	334	127	21	2	23	3.0	0.76	3.76
Kyook Plyoo, for 3 years, ...	274	396	144	9	1	10	3.30	0.40	3.70
Ramree, for 2 years,	90	262	300	3	0	3	3.34		3.34
Debroghur, for 3 years,	93	176	190	10	1	20	20.43	1.7	21.50
Pooree,	290	464	160	18	12	30	6.29	4.14	10.30
Pubna,	232	253	109	16	3	19	6.89	1.29	8.18
Rungpore,	627	584	93	82	8	90	13.7	1.28	14.35

TABLE No. 4.—(Continued.)

Stations.	Average strength of Prisoners during the year.	Average admissions during the year.	Ratio per cent. of admissions to strength.	Deaths by ordinary diseases.	Deaths by Cholera.	Total Deaths.	Ratio per cent. of deaths by ordinary diseases.	Ratio per cent. of deaths by Cholera.	General Ratio per cent. of deaths to strength.
Sylhet,	503	599	118	49	18	67	9.74	3.58	13.32
Tipperah,	475	395	83	19	6	25	4.0	1.26	5.26
Tezpur,	203	378	186	10	3	13	4.92	1.48	6.40
Patna,	910	511	56	30	22	52	3.29	2.42	5.71
Poorneah,	487	608	123	60	13	73	12.32	2.86	15.18
Gyah,	1325	1328	100	78	21	99	5.88	1.58	7.46
Bhaugulpore,	616	673	109	41	12	53	6.64	1.95	8.59
Arrah,	778	352	45	53	17	70	6.82	2.18	9.0
Saaron,	745	417	60	48	8	56	6.44	1.75	8.19
Tirhoot,	766	1012	132	92	46	138	10.21	6.0	16.21
Monghyr,	722	644	89	57	19	76	7.89	2.63	10.52
Hazareebaugh,	191	231	121	21	3	24	10.10	1.55	11.65
Champaran,	382	277	98	22	4	26	7.80	1.40	9.20
Potaularee,	118	129	109	8	1	9	6.80	0.82	7.62
Kissenpore, for 3 years,	432	1168	270	53	6	59	12.27	1.26	13.53
Benares,	790	855	182	50	5	55	6.33	0.63	6.96
Ghazepore,	714	1812	253	25	5	30	3.51	0.63	4.14
Mirzapore,	814	1514	185	70	10	80	8.60	1.22	9.82
Jaunpore,	735	101	136	45	6	51	6.12	0.81	6.93
Azingurh,	735	540	73	29	1	30	3.95	0.14	4.9
Goruckpore,	1287	947	73	43	3	46	3.34	0.23	3.57
Allahabad,	1074	1117	104	97	81	178	9.3	7.54	17.57
Bandah,	499	485	97	29	3	32	5.80	0.60	6.40
Cawnpore,	1064	677	63	45	1	46	4.23	0.9	4.32
Etawah,	380	493	130	20	0	20	5.26	0	5.26
Futteghur,	743	532	74	49	0	49	6.58	0	6.58
Futtehpore,	552	429	77	16	1	17	2.90	0.18	3.8
Hamirpore,	393	401	137	21	0	21	7.17	0	7.17
Khodagunge,	257	318	123	9	0	9	3.50	0	3.50
Mynpooree,	1800	512	28	80	0	80	4.44	0	4.44
Gangs attached to Cawnpore Jail, for 1 year,	1163	252	22	62	0	62	5.33	0	5.33
Ackburpore, for 1 year,	65	125	210	1	0	1	1.54	0	1.54
Meerut,	490	394	84	29	1	30	5.92	0.21	6.13
Deobet,	653	1686	254	68	0	60	1.2	0	10.2
Barilly,	1945	1975	101	167	3	170	8.58	0.15	8.73
Shajehanpore,	471	433	90	38	1	39	8.6	0.21	8.27
Moradabad,	1095	1170	107	89	3	92	8.13	0.27	8.40
Bijnore,	234	455	158	10	0	10	4.27	0	4.27
Goorgaon,	350	378	108	28	1	29	8.0	0.28	8.28
Saharanpore,	447	480	107	24	0	24	5.37	0	5.37
Muzaffernugur,	330	230	70	22	1	23	6.69	0.30	6.99
Deyrah,	76	179	202	5	0	5	6.25	0	6.25

TABLE No. 4.—(Continued.)

Stations.	Average strength of Prisoners during the year.	Average admissions during the year.	Ratio per cent. of admissions to strength.	Deaths by ordinary diseases.	Deaths by Cholera.	Total Deaths.	Ratio per cent. of deaths by ordinary diseases.	Ratio per cent. of deaths by Cholera.	General Ratio per cent. of deaths to strength.
Almorah,	56	229	400	3	0	3	5.90	0	5.90
Hindun River, } for 2 years, ... }	409	971	237	6	0	6	1.49	0	1.49
Budaon, for 4 } years, }	324	556	171	13	0	13	4.1	0	4.1
Agra,	1077	1001	92	73	7	80	6.70	0.65	7.35
Matra,	380	265	70	18	1	19	4.73	0.26	4.99
Allyghur,	758	1069	141	53	1	54	7.3	0.13	7.16
Bolneshahur, ...	527	408	77	15	0	15	2.84	0	2.84
Panecput,	256	446	173	33	0	33	12.91	0	12.91
Rhotuck,	174	273	156	10	0	10	5.55	0	5.55
Hissar,	287	861	300	16	0	16	5.58	0	5.58
Sirsa,	391	433	110	11	2	13	2.73	0.37	3.30
Loodiana,	109	199	184	3	0	3	3.0	0	3.0
Amballah,	461	534	116	39	0	39	8.46	0	8.46
Subathoo,	44	137	300	1	0	1	2.30	0	2.30
Ferozepore,	114	169	150	3	0	3	2.62	0	2.62
Saugor,	352	1088	309	46	4	50	13.7	1.13	14.20
Jubbulpore,	1075	611	57	47	4	51	4.37	0.37	4.74
Hussingabad,	232	373	161	13	0	13	6.0	0	6.0
Seonee,	140	223	190	11	1	12	8.0	0.71	8.71
Baitool,	97	173	178	4	0	4	4.12	0	4.12
Ajmere,	217	180	83	6	1	7	2.76	0.46	3.22
Beawar,	60	89	150	0	0	0	0	0	0
Mundlaur,	134	216	161	8	2	10	6.0	1.50	7.50

JAMES HUTCHINSON,

Secretary Medical Board.

TABLE No. 5.

STATEMENT showing the Mortality among the Prisoners throughout the Presidency of Fort William, and the North Western Provinces from the year 1835 to 1843.

PERIOD OF OBSERVATION NINE YEARS.

YEARS.	Average Strength of Prisoners during the year.	Total Admissions into Hospital during the year.	Proportion of Sick "to Well."	Ratio per Cent. of Sick to Strength.	DEATHS.		Total Deaths.	Ratio per Cent. of Deaths by ordinary Diseases.	Ratio per Cent. of Deaths by Cholera.	General Ratio per Cent. of Deaths to Strength.
					Deaths by ordinary Diseases.	Deaths by Cholera.				
1835.	Lower Provinces, ...	18720	1. 8 to 1	179	1136	231	1367	6—6	1—23	7—30
	Upper Ditto,	18807	1.05 to 1	105	743	16	759	3—95	— 8	4— 3
	Total,	37527	1.43 to 1	143	1879	247	2126	5	— 64	5—64
1836.	Lower Provinces, ...	22368	1.23 to 1	123	1543	253	1796	6—90	1—13	8— 3
	Upper Ditto,	18600	1.14 to 1	114	1163	30	1193	6—25	— 16	6—47
	Total,	40968	1.20 to 1	120	2706	283	2989	6—69	— 70	7—30
1837.	Lower Provinces, ...	21835	1.45 to 1	145	1437	445	1882	6—58	2— 3	8—61
	Upper Ditto,	25640	1. 3 to 1	103½	1684	112	1796	6—56	— 43	6—49
	Total,	47475	1.23 to 1	123	3121	557	3678	6—69	1—17	7—76

1838.	Lower Provinces, ...	24129	33411	1.30 to 1	130	1270	361	1631.	5-26	1-8	6-34
	Upper Ditto,	32508	43941	1.40 to 1	140	435	424	4778	13-25	1-38	14-63
	Total,	56637	77352	1.36 to 1	136	5624	785	6409	9-22	1-38	10-66
1839.	Lower Provinces, ...	22180	27876	1.25 to 1	125	367	368	1735	6-16	1-65	7-81
	Upper Ditto,	28572	28636	1 to 1	100	2276	190	2406	7-96	— 66	8-62
	Total,	50752	56512	1.1 to 1	100½	3643	558	4201	7-17	1-10	8-27
1840.	Lower Provinces, ...	23191	28606	1.23 to 1	123	1364	388	1752	5-45	1-71	7-16
	Upper Ditto,	24933	26785	1.7 to 1	107	1310	50	1360	5-25	— 20	5-30
	Total,	48144	55391	1.15 to 1	115	2674	438	3112	5-55	— 90	6-45
1841.	Lower Provinces, ...	23886	31221	1.30 to 1	130	1762	713	2475	7-37	2-98	10-35
	Upper Ditto,	23836	25526	1.7 to 1	107	1474	99	1573	6-18	— 41	6-59
	Total,	47722	56747	1.19 to 1	119	3236	812	4048	6-78	1-71	8-49
1842.	Lower Provinces, ...	24150	32663	1.35 to 1	135	1725	467	2192	7-14	1-93	9-1
	Upper Ditto,	23386	28341	1.20 to 1	120	1149	96	1245	4-82	— 38	5-20
	Total,	47536	61004	1.27 to 1	127	2874	563	3437	6-22	1-17	7-19
1843.	Lower Provinces, ...	23790	31968	1.34 to 1	134	1819	391	2210	7-64	1-64	9-28
	Upper Ditto,	23731	31439	1.32 to 1	132	1839	95	1634	6-44	— 40	6-84
	Total,	47521	61004	1.33 to 1	133	2874	563	3437	6-2	1-17	7-19
	Grand Total,	424697	530195	.....	.....	28631	4006	33437	8-73	— 94	7-67
	Yearly Average,	47188	58910	1.25 to 1	125	3180	445	3715	.....	.....	.....

JAMES HUTCHINSON,

Secretary Medical Board.

TABLE No. 6.

Exhibiting the Strength, Admissions into Hospitals, and Ratio per cent. of Sick, to Strength and of Deaths to Strength amongst the Native Troops in Bengal, and the North Western Provinces, for nine years.

PERIOD OF OBSERVATION FROM 1834 TO 1842 INCLUSIVE.

YEARS.	Average strength.	Total admissions during the year.	Deaths from ordinary diseases.	Deaths by Cholera.	Ratio per cent. of deaths by ordinary diseases to strength.	Ratio per cent. of deaths by Cholera to strength.	General Ratio.
1834,.....	72363	62900	755	105	1.4	0.14½	1.18½
1835,.....	77415	61949	881	62	1.13	0.8	1.21
1836,.....	72814	59489	724	50	0.99	0.7	1.6
1837,.....	70149	58308	907	139	1.29	0.20	1.49
1838,.....	81563	80880	1186	247	1.33	0.42	1.75
1839,.....	105210	89255	1363	280	1.29	0.27	1.56
1840,.....	107314	85921	1412	120	1.31	0.12	1.45
1841,.....	96424	93333	1508	270	1.56	0.28	1.84
1842,.....	99473	115301	2083	277	2.9	0.27	2.36
Annual Average, ...}	86969	78594	1202	172	1.38.100	0.20.100	1.58.100

JAMES HUTCHINSON,

Secretary Medical Board.

TABLE No. 7.

Exhibiting the Strength, Admissions into Hospital, and Ratio per cent. of Sick to Strength, and of Deaths to Strength amongst the European Troops in Bengal, and the North Western Provinces, for nine years.

PERIOD OF OBSERVATION FROM 1834 TO 1842, INCLUSIVE.

YEARS.	Average strength.	Total admissions during the year.	Deaths from ordinary diseases.	Deaths by Cholera.	Ratio per cent. of deaths by ordinary diseases to strength.	Ratio per cent. of deaths by Cholera to strength.	General ratio.
1834,.....	10977	16154	408	57	3.65.100	0.60.100	4.25.100
1835,.....	10961	15574	348	27	3.18.100	0.24.100	3.42.100
1836,.....	11361	17473	153	43	3.38.100	0.38.100	3.76.100
1837,.....	10879	16927	336	124	3.8.100	1.14.100	4.22.100
1838,.....	10734	20507	424	149	3.94.100	1.38.100	5.32.100
1839,.....	11167	19411	514	37	4.62.100	0.33.100	4.95.100
1840,.....	13277	29758	964	103	7.26.100	0.73.100	7.99.100
1841,.....	16434	30988	822	168	5.0.100	1.2.100	6.2.100
1842,.....	19522	45786	1363	432	6.63.100	2.10.100	8.73.100
Annual Average. }	12812	23619	592	126	4.62.100	0.81.100	5.143.100

JAMES HUTCHINSON,
Secretary Medical Board.

TABLE No. 8.*

Showing the Mean Strength of the Native Troops employed in the Presidency of Madras, during the years 1827-28-29 and 30, the number of Death., and the annual ratio of Mortality per 1000.

Years.	Strength.	Died.	Annual ratio of Mortality per 1000.
1827,	84,128	1,362	16
1828,	76,224	1,119	14
1829,	71,945	811	11
1830,	67,106	707	10
Total,	2,99,403	4,011	
Mean of 4 years, . .	74,850	1,010	13.5

* Thomson's Prize Thesis.

TABLE No. 9.*

Showing the Mean Annual Strength of British Troops employed in the Presidency of Bengal, the number of Deaths, and the ratio of Deaths per 1000, of the Mean Strength during a period of seven years, (1826 to 1832,) compiled from Dr. Burke's Observations on the Mortality of the Troops in India.†

Years.	Strength.	Died.	Ratio of Mortality per 1000.
1826,	7,976	574	97
1827,	8,761	522	60
1828,	8,916	541	62
1829,	8,680	575	66
1830,	9,520	362	38
1831,	9,635	393	43
1832,	7,950	311	40
Total,	60,904	3,486	
Mean of 7 years.	8,700	498	57

* Thomson's Prize Thesis.

† Edinburgh Med. Journal, Vol. xli p. 386.

TABLE No. 10.

TABLE showing the Average Monthly Strength, Admissions and Deaths, among the Prisoners in Bengal, and the North Western Provinces for $\frac{1}{2}$ years.

PERIOD OF OBSERVATION FROM 1839 TO 1843 INCLUSIVE.

MONTHS.		Average Strength per mensem.	ADMISSIONS PER MENSEM.					DEATHS PER MENSEM.					Ratio per Cent. of Admissions to Deaths by ordinary Diseases.	Ratio per Cent. of Deaths by Cholera Morbus.	Proportion of Deaths to Strength.						
			Fever.	Dysentery.	Cholera.	Other Diseases.	Total Admissions per mensem.	Fever.	Dysentery.	Cholera.	Other Diseases.	Total Deaths per mensem.									
Lower Provinces, Upper Ditto,.....	Remaining on the 31st December 1838, Lower Provinces,.....	282	60	75	10	520															
	Ditto ditto ditto, Upper Ditto,.....	460	135	123	4	571															
	Average of 5 January,.....	22877	646	184	235	39	890	2192	25	20	32	18	40	141	1510	6	9-58	-54	1 in 1270	1 in 162	
		27281	691	160	119	10	1016	1995	27	30	25	2	35	135	1575	22	7-95	-	1 in 1240	1 in 209	
Lower Provinces, Upper Ditto,.....	Mean of the two,.....	47958	1337	344	352	49	1906	4187	52	56	57	20	75	261	3085	28	8-73	-50	1 in 2397	1 in 183	
	Average of 5 February,.....	22827	582	188	201	59	930	1961	21	23	27	25	21	134	1848	8	8-57	-47	1 in 913	1 in 170	
		24485	520	122	79	14	805	1541	20	91	13	1	25	81	1181	16	6-20	-32	1 in 24425	1 in 302	
	Mean of the two,.....	47312	1102	310	280	73	1735	3502	41	43	40	26	212	215	3025	24	7-42	-39	1 in 1820	1 in 216	
Lower Provinces, Upper Ditto,.....	Average of 5 March,.....	22945	658	233	263	149	1010	2416	23	23	29	54	37	166	1762	7	10-52	-48	1 in 421	1 in 127	
		24410	617	134	86	21	994	1852	21	18	12	3	27	82	1600	23	7-57	-22	1 in 8147	1 in 2984	
	Mean of the two,.....	17335	1275	369	347	170	9004	4268	44	41	41	57	64	248	3362	30	9-0	-43	1 in 830	1 in 191	
	Average of 5 April,.....	23402	674	272	27	177	1089	2485	24	24	29	71	32	181	1814	7	10-51	-47	1 in 329	1 in 125	
Lower Provinces, Upper Ditto,.....		24536	770	1	5	95	27	1042	2070	26	15	12	2	25	102	1790	24	8-45	-40	1 in 12270	1 in 240
	Mean of the two,.....	47938	1444	407	122	20	2131	4555	50	39	41	73	57	283	3604	31	9-52	-43	1 in 636	1 in 168	
	Average of 5 May,.....	23588	682	264	269	174	108	2340	26	30	34	72	32	190	1790	5	9-99	-50	1 in 387	1 in 124	
		24151	875	139	85	41	1034	2188	28	18	11	9	32	59	1931	27	8-40	-37	1 in 2681	1 in 243	
Lower Provinces, Upper Ditto,.....	Mean of the two,.....	47729	1497	403	35	215	1162	4528	54	43	45	81	64	289	3631	32	8-77	-43	1 in 488	1 in 165	
	Average of 5 June,.....	23785	601	2	232	129	107	2279	19	22	27	49	30	157	1629	5	9-50	-42	1 in 485	1 in 131	
		25153	745	1	5	109	51	1173	214	25	15	14	9	28	93	1832	23	8-80	-33	1 in 2795	1 in 276
	Mean of the two,.....	48938	1346	415	361	180	2180	4473	44	37	49	58	58	230	171	28	9-0	-39	1 in 815	1 in 196	
Lower Provinces, Upper Ditto,.....	Average of 5 July,.....	24243	821	306	294	229	1189	2713	27	29	34	51	32	170	1930	5	10-11	-41	1 in 475	1 in 132	
		25549	801	211	159	53	1348	2573	23	22	26	12	35	118	2174	33	10-10	-41	1 in 2112	1 in 213	
	Mean of the two,.....	49692	1622	517	453	175	2537	5286	46	51	60	63	67	288	4124	38	10-75	-45	1 in 772	1 in 172	
	Average of 5 August,.....	25874	904	288	326	63	1186	2776	23	35	43	23	34	150	2042	7	10-72	-53	1 in 1120	1 in 162	
Lower Provinces, Upper Ditto,.....		25811	1183	266	244	401	1270	2120	20	31	40	21	39	160	2467	25	8-21	-53	1 in 1229	1 in 161	
	Mean of the two,.....	51685	3087	548	570	46	2456	4896	50	66	82	44	73	319	4509	32	7-21	-41	1 in 1175	1 in 163	
	Average of 5 September,.....	25874	967	232	289	57	1141	2701	27	42	46	12	40	160	1986	6	10-71	-59	1 in 1725	1 in 157	
		25147	1527	212	214	22	1816	272	46	39	50	6	49	191	2531	33	8-63	-73	1 in 4193	1 in 131	
Lower Provinces, Upper Ditto,.....	Mean of the two,.....	51021	2487	444	503	75	2957	4873	69	81	96	21	89	360	4527	9	8-15	-51	1 in 2143	1 in 142	
	Average of 5 October,.....	23342	948	251	288	68	904	2530	20	28	45	32	47	192	1964	5	10-9	-68	1 in 729	1 in 121	
		24850	1508	211	197	12	1022	2731	74	45	62	5	56	243	2637	38	12-20	-95	1 in 4970	1 in 103	
	Mean of the two,.....	48192	2456	462	485	80	2016	5281	104	83	107	37	99	435	4601	43	10-15	-82	1 in 1303	1 in 117	
Lower Provinces, Upper Ditto,.....	Average of 5 November,.....	23370	935	223	252	63	964	2805	26	45	56	30	45	248	1775	7	10-20	-76	1 in 779	1 in 112	
		24225	1006	192	154	15	855	2223	75	42	50	3	60	230	408	70	9-15	-93	1 in 6098	1 in 103	
	Mean of the two,.....	47665	1941	415	413	78	1819	5009	111	87	106	33	103	438	3787	37	10-53	-85	1 in 1444	1 in 108	
	Average of 5 December,.....	23081	785	233	267	61	916	2140	36	48	51	24	48	203	1728	3	9-27	-77	1 in 962	1 in 113	
Lower Provinces, Upper Ditto,.....		24316	787	284	140	16	976	2091	46	38	30	3	45	161	1742	24	8-40	-61	1 in 12156	1 in 174	
	Mean of the two,.....	47397	1525	517	407	77	1992	4231	82	81	81	26	93	304	3473	27	8-90	-71	1 in 1008	1 in 130	
	Remaining 31st December 1843, Lower Provinces,.....	287	89	182	23	531	1079														
	Ditto ditto ditto, Upper Ditto,.....	335	69	79	2	576	1060														

TABLE No. 11.

Exhibiting the diseases which actually prevailed among the Prisoners, under confinement in the various Jails within the Lower Provinces, during the year 1843, drawn up according to the form of Hospital Return now in use, on the Bengal Establishment.

DISEASES. CLASSES AND NAMES.		AVERAGE STRENGTH 24,333.																
		Remaining.	Admitted.	Total.	Discharged.					Deaths and Ages.							Remaining.	
					Cured.	Average period under treatment.	Transferred.	Liberalized or re-salt unknown.	Died.	Average period under treatment.	From 26 to 30.	From 30 to 40.	From 40 to 50.	From 50 to 60.				
Of the digestive function,	Colica,	4	494	498	487	11	0	1	3	172	0	1	2	0	7			
	Diarrhoea,	133	2222	2345	2724	184	7	58	467	26	79	155	104	129	89			
	Cholera Biliosa,	1	347	348	235	16	0	4	106	6	18	41	30	17	3			
	Cholera Spasmodica,	9	882	891	534	16	0	4	327	52	60	130	61	46	16			
	Icterus,	0	7	7	6	40	0	0	0	0	0	0	0	0	1			
Of the respiratory function,	Asthma,	16	173	189	145	21	0	2	39	313	3	9	9	8	16			
	Febris,	200	6533	6733	6363	152	10	0	114	148	26	45	26	19	195			
	{ Intermittens,	79	2008	2678	2564	194	6	51	131	32	24	43	37	27	70			
	{ Continua,	21	675	696	617	202	4	16	45	20	11	14	12	8	19			
	Phlegmon & Abscessus,	20	527	547	512	144	4	11	8	534	1	2	1	4	17			
Of the sanguineous function,	Inflammatio,	0	9	9	8	25	0	10	0	0	0	0	0	0	0			
	{ Cerebralis,	18	354	372	304	154	0	1	41	40	11	20	10	3	18			
	{ Thoracica,	5	102	107	188	17	0	6	7	134	2	1	2	2	2			
	{ Enterica,	1	15	16	12	26	0	0	1	8	1	0	0	0	1			
	Hepatitis,	2	10	12	10	13	0	2	1	7	0	1	0	0	0			
Of the sanguineous function,	Splenitis,	9	106	115	89	313	0	1	13	47	5	6	2	0	12			
	Ophthalmia,	12	412	424	398	18	0	1	12	414	2	8	1	1	6			
	{ Acuta,	11	192	203	174	13	0	8	12	60	6	4	1	1	13			
	{ Chronica,	4	161	165	139	191	0	4	17	22	3	1	1	9	8			
	Catarrius,	135	2764	2899	2348	21	7	1	398	33	60	25	112	101	96			
Of the sanguineous function,	Dysenteria,	32	802	834	590	113	1	50	167	30	17	54	40	51	4			
	{ Acuta,	32	828	860	792	223	3	18	17	144	1	8	4	4	33			
	{ Chronica,	13	351	364	329	36	1	25	10	25	5	4	1	0	20			
	Rheumatismus,	4	155	159	137	193	0	4	14	7	3	8	3	0	7			
	Phthisis Pulmonalis,	4	30	34	41	45	9	1	22	44	6	10	3	3	0			
Of the nervous function,	Serophula,	0	8	8	4	19	0	1	3	23	2	0	0	1	1			
	Syphilis,	19	283	293	239	23	0	0	3	57	0	2	0	1	6			
	{ Primaeva,	4	53	57	48	44	2	4	1	37	0	1	0	0	2			
	{ Consecutiva,	3	38	41	38	31	0	4	0	0	0	0	0	0	2			
	Elephantiasis,	0	13	13	11	0	0	1	1	8	0	0	1	0	0			
Of the nervous function,	Scrophula,	0	3	3	3	7	0	0	1	18	1	0	0	0	1			
	Ulcus,	119	2575	2694	2514	233	4	38	17	139	4	6	3	4	121			
	Mania,	15	132	147	91	28	28	0	108	2	3	0	1	1	13			
	Cataracta,	1	15	16	9	113	0	0	273	1	0	0	0	0	4			
	Tetanus,	0	2	2	0	0	0	0	5	0	1	1	0	0	0			
Of the nervous function,	Chorea,	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
	Epilepsia,	0	20	20	15	24	0	0	2	47	1	1	0	0	3			
	Apoplexia,	0	15	15	6	15	0	0	9	6	2	5	2	0	0			
	Paralysis,	1	10	11	3	24	0	3	5	203	0	1	2	0	0			
	Gonorrhoea,	4	63	67	62	13	0	1	1	16	0	1	0	0	3			
Of the excretory function,	Tumores,	0	25	25	27	22	0	0	0	0	0	0	0	0	0			
	{ Bronchocels,	0	7	7	7	29	0	0	0	0	0	0	0	0	0			
	{ Aneurysma,	14	185	199	19	38	0	3	33	11	18	10	14	24	24			
	Hydrops,	1	16	17	2	25	0	0	38	0	0	0	1	0	0			
	{ Pleurothorax,	3	16	19	7	17	0	1	9	241	1	2	3	5	2			
Of the excretory function,	{ Ascites,	3	53	66	51	18	0	2	3	51	1	1	0	1	0			
	{ Hydrocele,	0	30	30	30	28	0	0	0	0	0	0	0	0	0			
	Dysuria,	0	30	30	30	28	0	2	6	6	0	0	0	0	0			
	Lepra,	7	89	96	47	25	2	6	6	93	0	3	0	3	31			
	Typhus et Herpes,	21	184	205	1019	27	2	9	59	2	2	1	0	31	31			
From external violence,	Contusio,	6	253	259	238	15	1	0	49	1	1	1	4	12	12			
	Luxatio et Subluxatio,	3	15	15	13	63	0	0	12	0	1	0	0	0	1			
	Fractura,	19	862	881	448	20	0	5	6	12	1	3	2	0	22			
	Ditto Scapularium,	0	1	1	1	13	0	0	0	0	0	0	0	0	0			
	Ditto Anguinum,	0	1	1	1	6	0	0	0	0	0	0	0	0	0			
From external violence,	Fractura,	1	20	21	20	14	0	0	0	0	0	0	0	0	1			
	Amputatio,	0	22	22	22	29	0	4	3	29	0	0	3	0	3			
	Concussio Cerebri,	1	11	12	6	0	0	0	0	0	0	0	0	0	0			
	Alia Morbi,	186	3331	3447	3345	154	0	25	08	34	21	30	19	38	94			
	Total,	1113	30601	31714	27944	20	78	396	2217	47	395	800	528	491	1079			

Ratio per Cent. of Sick to strength,

Ratio per Cent. of Deaths to strength,

Daily average number of Sick,

Daily average Ratio per Cent. of Sick to strength,

JAMES HUTCHINSON, Secretary Medical Board.

TABLE No. 12.

Exhibiting the diseases, which actually prevailed among the Prisoners, under confinement in the various Jails, within the Upper Provinces, during the year 1843, drawn up according to the form of Hospital Return now in use, on the Bengal Establishment.

DISEASES. CLASSES AND NAMES.		AVERAGE STRENGTH 23,731													
		Remaindng.	Admitted.	Total.	Discharged.				Deaths and Ages.						
					Cured.	Average period under treatment.	Transferred.	Liberated or sent out unknown.	Died.	Average period under treatment.	From 20 to 30.	From 30 to 40.	From 40 to 50.	From 50 to 60.	Remaining.
Of the digestive function,	Colica,	1	608	609	591	113	0	1	11	681	5	4	1	1	6
	Diarrhoea,	71	1909	1980	1634	37	13	10	238	522	81	74	50	53	65
	Cholera Biliosa,	2	161	163	134	14	0	1	20	113	8	11	4	5	0
	Cholera Spasmodica,	0	210	210	139	19	3	3	08	283	27	16	15	10	0
	Enterus,	0	12	12	10	19	0	0	1	29	0	0	1	0	1
Of the respira- tory function,	A. Ithm,	8	188	196	156	28	0	1	31	162	6	8	7	10	8
	Febris,	235	8959	9194	8685	531	3	74	186	531	48	60	43	37	235
	Remittens,	142	3462	3604	3258	108	16	18	218	452	62	68	49	39	91
	Continua,	19	1343	1361	1229	45	1	13	89	442	32	25	19	13	29
	Pneumon et Abscessus,	22	514	536	493	23	0	9	18	72	3	8	4	3	46
Inflammation,	Cephalica,	0	42	42	36	15	0	2	2	16	1	0	0	1	2
	Thoracica,	10	116	126	89	17	0	5	23	8	3	11	6	3	9
	Enterica,	1	88	89	77	16	0	0	6	72	2	4	0	0	6
	Acuta,	0	27	27	25	9	0	0	1	4	1	0	0	0	1
	Chronica,	0	22	22	19	23	0	0	2	11	0	1	1	0	1
Of the sanguineous function,	Splenitis,	6	37	43	31	36	0	2	7	39	0	5	1	1	3
	Ophthalmia,	17	381	398	362	32	2	4	12	48	3	4	2	3	18
	Catarhus,	4	146	151	131	30	0	7	4	34	0	4	0	0	9
	Dysenteria,	41	1507	1608	1351	61	3	17	187	43	51	50	48	38	50
	Rheumatismus,	35	456	491	321	32	2	15	129	36	28	38	34	29	54
Of the nervous function,	Rheumatismus,	30	611	641	534	32	8	5	44	54	19	11	5	9	50
	Varicella,	22	319	341	304	44	5	3	19	55	4	5	5	5	10
	Phthisis Pulmonalis,	1	88	89	56	36	0	2	7	27	2	2	1	2	24
	Serophula,	2	45	27	22	17	0	0	24	20	3	10	4	7	1
	Syphilis,	4	5	9	7	50	0	1	0	0	0	0	0	0	1
Of the sexual function,	Primativa,	12	143	155	143	45	1	5	1	34	1	0	0	0	5
	Consecutiva,	6	140	146	131	27	0	2	1	10	1	0	0	0	12
	Elephantiasis,	1	8	9	5	23	0	2	1	39	0	1	0	0	1
	Gonorrhoea,	4	199	203	153	86	0	11	19	18	4	7	2	6	29
	Glaucoma,	0	14	14	7	36	0	0	4	81	2	1	0	0	1
Of the nervous function,	Albena,	135	3871	3936	3817	76	7	30	86	149	14	13	4	5	146
	Delirium Tremens,	18	173	191	83	37	24	4	15	52	3	3	6	2	0
	Catalepsy,	3	2	5	4	85	0	1	0	0	0	0	0	0	0
	Tetanus,	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Chorea,	0	13	13	12	61	0	0	0	0	0	0	0	0	1
Of the excre- ment function,	Epilepsy,	0	23	23	16	5	1	0	6	3	3	0	2	1	0
	Apoplexy,	0	2	2	2	501	0	0	0	0	0	0	0	0	0
	Paralysis,	1	5	6	5	25	0	0	1	1	1	0	0	0	0
	Gonorrhoea,	1	51	52	40	30	0	0	1	31	1	0	0	0	3
	Tumores,	0	3	3	3	7	0	0	0	0	0	0	0	0	0
Of the excre- ment function,	Brachiocele,	1	12	13	10	9	0	0	0	0	0	0	0	0	0
	Anasarca,	6	538	44	19	20	0	2	19	15	2	7	6	4	4
	Hydrothorax,	0	2	2	0	0	0	0	2	1	0	1	1	0	0
	Ascites,	1	7	8	4	62	0	0	3	36	2	0	1	0	1
	Hydrocele,	0	4	4	4	10	0	0	0	0	0	0	0	0	0
From external violence,	Dysuria,	0	4	4	5	45	0	1	0	0	0	0	0	0	2
	Leprosy,	0	40	48	37	49	0	0	2	51	1	1	0	0	9
	Scabies,	20	609	529	498	72	0	0	2	47	1	1	0	0	19
	Contusio,	7	284	291	264	21	0	0	1	41	0	1	0	0	14
	Luxatio et Subluxatio,	0	37	37	34	14	0	2	0	0	0	0	0	0	1
From external violence,	Vulnus,	41	580	624	518	52	11	52	8	38	6	5	2	1	32
	Ditto Scelopitum,	0	11	11	6	13	0	0	0	0	0	0	0	0	5
	Ditto Anguinum,	0	63	55	41	5	7	6	0	0	0	0	0	0	1
	Amputatio,	2	26	28	27	23	0	0	0	0	0	0	0	0	1
	Fractura,	6	72	78	60	66	3	9	0	0	0	0	0	0	6
From external violence,	Concusio Cerebri,	0	2	3	1	16	0	0	1	2	1	0	0	0	0
	Adi Mili,	44	2361	2605	2378	48	9	15	128	21	26	33	29	40	75
	Total,	1025	30415	31440	28213	394	157	388	1634	32	331	365	444	494	1068

Ratio per Cent. of Sick to strength,

132

Ratio per Cent. of Deaths to strength,

6.84

Daily average number of Sick,

2620

Daily average Ratio per Cent. of Sick to strength,

11.54

JAMES HUTCHINSON, Secretary Medical Board.

TABLE No. 13.*

Showing the principal fatal Diseases, which occurred among the Native Troops employed in the Presidency of Madras, during a period of four years, from 1827 to 1830 inclusive, together with the ratio of Mortality by particular classes of disease; the average annual strength being 74,856,

Classes of Diseases	Fatal Diseases.	Died,	Tot. death by each class of dis- eases dur- ing 4 years.	Annual ratio of morta- lity per 1000
Fevers,	{ <div> Feb. quot. inter. tertian, remittent, cont. com. ictorides. </div>	745	745	2.6
Rheumatism,	Typhus et synochus,	239	239	0.8
Pectoral com- plaints	{ <div> Thoracic inflammation, Pneumonia,..... Hæmoptysis, Phthisis pulmonalis, Catarrh, acute, chronic, Asthma, </div>	{ <div> 63 29 29 436 </div>	{ <div> 184 </div>	{ <div> 0.6 </div>
Diseases of liver, }	{ <div> Hepatitis acute, chronic, </div>	{ <div> 29 </div>	{ <div> 39 </div>	{ <div> 0.1 </div>
Diseases of bowels, }	{ <div> Enteritis,..... Dysentery, acute, chronic, </div>	{ <div> 29 436 </div>	{ <div> 495 </div>	{ <div> 1.1 </div>
Cholera morbus, ..	Diarrhoea,	30	30	0.1
	Colica,	990	990	3.3
Diseases of brain, }	{ <div> Apoplexia, Paralysis, Delirium tremens, Insanity, Cephalic inflammation, </div>	{ <div> 51 11 9 </div>	{ <div> 71 </div>	{ <div> 0.2 </div>
Dropsies,	{ <div> Anasarca, Ascites, Hydrothorax, </div>	{ <div> 232 </div>	{ <div> 232 </div>	{ <div> 0.3 </div>
Injuries and ulcers, Other diseases, ..	{ <div> </div>	{ <div> 248 808 </div>	{ <div> 248 808 </div>	{ <div> 0.9 2.7 </div>
	Total,...	4041	4041	13.5

TABLE No. 14.*

Showing the principal Diseases, which occurred among the European Troops employed in the Presidency of Bengal during a period of seven years, from 1826 to 1832 inclusive, with the annual ratio of deaths per 1000, by eight particular classes of disease, compiled from Dr. Burke's Observations on the Mortality of the Troops in India; † total strength 60,904.

Classes of Disease.	Specific Disease.	Died.	Tot. deaths by each class of disease during 7 years.	Annual ratio of mortality per 1000.
Fever,	Feb. quot. inter. tertian, remittens, cont. com. mictorides, typh. et synoch.	937	937	15.4
Pectoral diseases,	Thoracic inflam. Pneumonia,	162	162	2.5
	Hæmoptysis,			
	Phthisis pulmonalis, Catarrh, acute, chronic,			
Diseases of liver,	Asthma,			
	Hepatitis, acute, chronic,	258	258	4.2
Diseases of bowels,	Enteritis,	29		
	Gastritis,	10		
	Dysentery, acute, chronic,	996	1122	18.4
	Diarrhoea,	81		
Cholera morbus,	Dyspepsia,	6		
	.....	693	693	11.5
Diseases of brain,	Apoplexia,	105		
	Phrenitis,	8		
	Paralysis,	8		
	Delirium tremens, Insanity,	2		
	Cephalic inflammation,		123	2.0
Dropsies,	Anasarca,	19		
	Ascites,	16		
	Hydrothorax,		39	0.6
Other diseases, .....	.....	152	152	2.4
Total,		3486	3486	57.0

* Thomson's Prize Thesis.

† Edin. Med. Journal, Vol. XLI. page 386.

TABLE No. 15.

General Abstract of the Return of Sick of the Prisoners in the Jails under the Presidency of Fort St. George, for the year 1841.

	Per Cent.
Proportion of Admissions to the number of Prisoners,	98.934
Ditto of Deaths to the number of Prisoners,	3.541
Ditto of Deaths to the number of Prisoners, excluding deaths from Cholera,	2.879
Ditto of Deaths to the total sick treated,	3.375
Ditto of Deaths to the total sick treated, excluding Cholera,	2.654
Ditto of the average number of Prisoners to the average daily number of Sick in the year,	3.615

TABLE No 16.*

Showing the Population and Deaths, which occurred among the native inhabitants of two districts of the Peninsula of India, for one year, extracted from the Medical, Geographical and Agricultural Report by the Madras Government.

	Population.	Deaths.	Ratio of deaths per 1000.
Matura, ...	245,654	3933	16
Dindigul, ...	295,554	3438	11
Total, ...	541,308	7371	
Mean, ...	.....	.....	13

Bomba,, 50

* Thomson's Prize Thesis.

TABLE No. 17.

Showing the annual ratio of mortality per 1000, which occurred from eight classes of Disease among the British Troops in Scotland, the British Troops in Madras, and the Native Troops in Madras.

Classes of Disease.	Annual ratio of mortality per 1000		
	Among British troops.		Among native troops in M. dras.
	In Scotland.	In M. dras.	
Fevers,	2.6	6.5	2.5
Diseases of lungs,	4.7	2.2	0.6
In,	0.2	6.0	0.1
bowels,	0.5	18.7	1.7
Cholera morbus,		6.4	3.3
Diseases of brain,	0.7	1.2	0.2
Dropsies,	0.7	0.8	0.8
Other diseases,	1.7	6.2	3.6
Total deaths,...	11.0	48.0	13.0

* Thomson's Prize Thesis.

NOTE.—Some of the foregoing Complicated Tables have been more hurriedly got up, than could have been desired, and it is not impossible, that they may not be in all respects, perfectly correct; great labor, however, has been employed in their construction; and it is hoped, they may be found sufficiently accurate, for all general purposes.

THE END.

